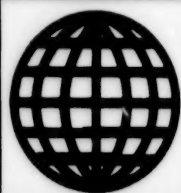


JPRS-TEN-94-022  
20 September 1994



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546-2423-94

9/23/94

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# ***JPRS Report***

# **Environmental Issues**

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# Environmental Issues

JPRS-TEN-94-022

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**NOTE TO READERS:** Effective 1 October, the processing indicators appearing in brackets at the start of each item will be changed. All new indicators will begin with "FBIS" to make the material more easily identifiable. Some will also indicate whether the item has been translated from the vernacular or transcribed from English.

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## REGIONAL AFFAIRS

### Roundup of Environmental Reports From 9-28 August

AB2908070594

[Editorial Report] The following is a roundup of recent environmental reports monitored from media in FBIS Abidjan Bureau and EAU coverage areas from 9-28 August.

#### NIGERIA

Lagos Radio Nigeria Network in English at 1800 GMT on 15 August reports that timber contractors in Edo State are now to be responsible for the regeneration of forest resources exploited under the blueprint on forest utilization management announced by the government. According to the radio, the state administrator, Lt. Col. Mohammed Onuka, announced this at a meeting with timber contractors and saw millers in Benin. He also expressed regret at the wanton destruction of forest resources in the state, and warned that his administration would no longer condone such acts. He finally stressed that all efforts should be geared toward the protection, preservation, and sustainable utilization of these resources for the betterment of present and future generations.

Lagos Radio Nigeria Network in English at 0600 GMT on 24 August reports that the Federal Government has appointed an 11-man council to oversee the affairs of the Federal Environmental Protection Agency. The council has the secretary to the government of the federation, Alhaji Aminu Saleh, as chairman, while six ministers, including those of works and housing; agriculture and natural resources; petroleum and mineral resources; industry; communications; and finance, are members. At the inauguration of the council, Alhaji Aminu stressed the importance the Federal Government attached to keeping the environment safe and clean. This, he said, influenced the government's decision to appoint the council.

#### TANZANIA

Dar es Salaam Radio Tanzania External Service in English at 1800 GMT on 26 August reports that "a three-day workshop on objective-oriented project planning, in preparation for the establishment of a national cleaner [as heard] production center, the NCPC, in the country has ended in Dar es Salaam with an appeal for concerted efforts to fight various causes of environmental pollution." The radio goes on to report that "the workshop, organized jointly by the Tanzania Industrial Research and Development Organization, TIRDO, UNIDO and UNEP, noted that there was serious pollution in the country, and called for urgent measures for environmental protection." The radio reports that

"approximately 48% and 57% of urban and rural population, respectively, did not have access to safe drinking water."

#### ZAIRE

Paris AFP in English at 0128 GMT on 23 August states that: "Rwandan refugees fleeing into Zaire have left a trail of ecological devastation, uprooting trees, and erecting makeshift huts on virgin territory. It was to stop the destruction that Zairean authorities last Saturday [20 August] closed a key border crossing, the Ruzizi I bridge, according to a Zairean official who asked not to be named."

#### SWAZILAND

### Country Committed To Phasing Out Ozone-Depleting Chemicals

MB3008181394 Mbabane Radio Swaziland Network in English 1600 GMT 30 Aug 94

[Text] The deputy prime minister, Dr. Sishayi Nxumalo, says Swaziland is committed to the phasing out of the ozone-depleting chemicals despite the fact that it is not as industrialized as other developing countries.

Dr. Nxumalo was speaking at the official opening of a two-day international workshop on the practical implementation of the Montreal Protocol on substances that deplete the ozone layer, at the Swazi Sun's Convention Center, attended by English-speaking African countries. He said scientists have proved that the depletion of the ozone layer will lead to a reduction of the shielding capacity against harmful ultraviolet radiation thus giving rise to increased skin cancer and eye cataracts. The deputy prime minister said following this alarming scientific evidence of the damaging effects on the stratospheric ozone layer, through the Montreal Protocol, member countries agreed to phase out ozone-depleting chemicals such as (chlorofluoro) carbons and [word indistinct].

He further appealed to all participants to make positive deliberations during the workshop as the ozone layer is a concern for all human beings. He said it is the duty of this generation to address the issue so as to not be judged poorly by the generations yet to come. In an interview the director of the Swaziland Environment Authority, Mr. J.D. Vilakati, said during this workshop participants will learn the practical implementation of the Montreal Protocol on substances that deplete the ozone layer. He further said there would also be an indication on how to phase out, and what would be put in place as alternatives which would be environment friendly.

Mr. Vilakati made an example, that some of these harmful chemicals are found in electrical appliances such as fridges and air conditioners. The workshop is funded by the government of South Africa.

**Beijing 'Widely Using' Remote Sensing Research***OW3108051394 Beijing XINHUA in English  
0434 GMT 31 Aug 94*

[Text] Beijing, August 31 (XINHUA)—China is widely using the technology of remote sensing in the fields of prospecting, agricultural survey, weather forecasting, disaster monitoring and city planning.

Experts say that China has grown to a leading position in the world in the research and application of remote sensing technology.

Chinese remote sensing specialists, who had to be lectured on remote sensing by foreigners only a decade before, are now invited to give lectures themselves at international conferences on the subject. They even offer training on the subject for people from all over the world.

In fact, remote sensing has been able to play an important role in all fields of activity in the country.

In late July, a plane carrying a remote-sensing simultaneous processing system flew over south China's Guangdong Province and the Guangxi Zhuang Autonomous Region to monitor floods. The data gathered by the system provided

**Grassland in Hebei Province Expanding 'Greatly'***OW3008022394 Beijing XINHUA in English  
0114 GMT 30 Aug 94*

[Text] Shijiazhuang, August 30 (XINHUA)—Green grass in north China's Hebei Province has been expanding greatly and is helping to protect Beijing and Tianjin cities from soil erosion and sandstorms.

These disasters have been reduced to their lowest level in the the past ten years as green land has been expanded to 4.73 million ha as a result of tree planting and grass seeding.

Green land in the province decreased by 2.17 million ha from 1979 to 1984, posing a great danger to the local animal husbandry industry and causing a shortage of drinking water. Sandstorms lashed Beijing and Tianjin.

Since the early 1980's efforts have been made to improve the province's green coverage. As a result, water and soil erosion have dropped by over 50 percent.

In addition, the expansion of grassland has brought prosperity to the animal breeding industry.

**Administration To Take Steps To Control Coastal Pollution***HK3008050294 Beijing CHINA DAILY in English  
30 Aug 94 p 3*

[By He Jun: "Controls To Limit Coastal Pollution"]

[Text] China is to take steps to improve the protection of its marine environment and ecology by stricter management and more cooperation between government departments.

The overall environmental condition of China's territorial waters is good but coastal seas are becoming more polluted.

Wang Fei, an official with the State Oceanic Administration (SOA), said that the top targets for cleaning up operations include Dalian Bay, Jiaozhou Bay, seas near the mouths of the Yangtze and Pearl Rivers, and areas offshore large and medium-sized cities.

Though no recent statistics are available, Wang said that the environment of shallow sea areas near the coast, especially near cities, was declining.

As China is in the initial stage of industrialization, the pollutants released by onshore industries and ships is expected to grow steadily over the next decade, Wang said.

"But we'll try our best to limit it to a proper level," he added.

SOA will closely co-operate with the National Environmental Protection Agency (NEPA) and central and local transportation and fishery authorities to strengthen the comprehensive management of the marine environment, he added.

Effective pollution control measures for onshore industries are of great importance to the protection of the marine environment, because 60 to 70 percent of sea pollutants originate from onshore sources, he said.

Stronger laws against polluters were required, said Wang.

Since China adopted the Marine Environmental Protection Law in 1983, central and local governments initiated a series of laws and regulations governing the sector, he said.

The official noted that the water in most parts of the Bohai Sea has been upgraded to first-class national standard. Before the mid-1980's, the waters of the Bohai Sea were seriously polluted by offshore oil rigs.

Wang vowed to further strengthen the work of the National Oceanic Monitoring Network by running more training courses for staff and by upgrading its equipment.

Established in 1984 and with more than 100 member units, the network gathers about 1 million items of data on 42 subjects each year.

According to the China Action Plan for Environmental Protection approved by the State Council this year, SOA and NEPA will jointly establish a further 60 to 80 marine nature reserves over the next five years.

To date, China has seven state marine nature reserves and a further eight under local government control.

**Jiangxi Lake Cleared of Pollutants; Fish Return***OW2708142194 Beijing XINHUA in English  
0918 GMT 27 Aug 94*

[Text] Nanchang, August 27 (XINHUA)—The Luxi Lake, a national-level tourist resort in Yingtan city of

east China's Jiangxi Province, has become clean again after eight years of heavy industrial pollution.

A paper mill at the lakeside used to pollute the lake in the middle of the 1980s.

State Councillor Song Jian ordered late last year that concrete measures should be taken to save the lake.

Earlier this year the paper mill was ordered to stop production and lake water has turned clean and fish have returned.

#### **Afforestation of Nation's North Produces Economic Benefits**

*OW2808030794 Beijing XINHUA in English  
0233 GMT 28 Aug 94*

[Text] Yinchuan, August 28 (XINHUA)—Some 32.6 million mu (two million ha [hectares]) of economic forests have been planted in northern China over the past 15 years, bringing about an annual income of more than six billion yuan (about 700 million U.S. dollars).

The forests are part of a shelterbelt planted across north, northeast and northwest China since 1978. It is aimed at protecting the arable land in 13 provinces and autonomous regions from sandstorms, soil erosion, floods and drought.

In the past few years local governments attached more importance to economic benefits. As a result, economic forests have come to account for 15 percent of the shelterbelt, compared with only three percent in the past.

Moreover, 2,658 forest-related industrial projects were developed, and this realized an annual income of over 600 million yuan.

The economic benefits, in turn, have accelerated the pace of the shelterbelt building program.

#### **Jiangsu Helps People Affected by Water Pollution**

*OW2808135394 Beijing XINHUA in English  
1314 GMT 28 Aug 94*

[Text] Nanjing, August 28 (XINHUA)—The provincial government of east China's Jiangsu has taken urgent measures to help local people affected by water pollution along the lower reaches of the Huaihe River.

From 16 to 21 July, a sluice gate in Bengbu of neighboring Anhui Province, which is on the middle reaches of the Huaihe River, was opened and let out 200 million cubic meters of polluted water.

On 23 July the polluted water reached Jiangsu, which is on the lower reaches of the river, and formed a 150-km polluted water belt from Wuhe in Anhui to Hongze Lake in Jiangsu.

Now over 400,000 local people living in the area are suffering from a shortage of drinking water.

Crops as well as industrial and aquatic production in the area have also been affected.

The Huaihe River runs through four provinces of Henan, Anhui, Jiangsu and Shandong. About 150 million people live in the Huaihe River Basin. Since the 1980s, its main tributaries have been polluted as a result of industrial development on both banks of the river.

The Jiangsu Provincial Government has allocated two million yuan (about 233,000 U.S. dollars) to help the local people.

Huaiyin City Government in the area has closed a sluice gate for 24 hours to cut further pollution along the river.

The provincial government also collected 13 million yuan for the building of pipelines to provide local people with clean drinking water, as well as digging wells to exploit groundwater.

Supervision and medical teams have been sent to the affected area since July 23.

The armed forces stationed in the province have also taken an active part in the relief work.

#### **Guangxi Zhuang Region Draws Up Laws To Protect Rare Animals**

*OW2908055194 Beijing XINHUA in English  
0410 GMT 29 Aug 94*

[Text] Nanning, August 29 (XINHUA)—Southwest China's Guangxi Zhuang Autonomous Region is working out regulations to protect rare wild animals.

According to an official in charge of the effort, people who catch, kill, smuggle or trade rare wild animals will be fined between 200 yuan and 100,000 yuan, and the animals involved and their illegal gains will be confiscated.

People who provide tools and convenience for such illegal acts will be fined between 1,000 yuan and 50,000 yuan.

Guesthouses, hotels and restaurants which sell food made of wild will also be heavily fined.

Judicial organs will trace the criminal responsibility of those who violate the related laws and regulations on protecting wild animals.

In addition, the regional government will commend and award scientific workers who make successful efforts in saving rare wild animals.

The Guangxi Zhuang Autonomous Region has more than 880 kinds of wild terrestrial vertebrates and 163 kinds of other wild animals, of which 121 kinds have been listed by the state for top priority protection.

#### **Southeastern Gansu Makes Progress in Afforestation Efforts**

*OW2908060194 Beijing XINHUA in English  
0446 GMT 29 Aug 94*

[Text] Lanzhou, August 29 (XINHUA)—A densely-wooded forest belt, 800 km long, has taken shape in the



southeastern part of northwest China's Gansu Province, thanks to painstaking efforts of more than three decades by workers of local forest farms and residents.

The Xiaolong mountain forest belt, which covers eight counties in Tianshui, Longnan and Dingxi Prefectures, has now been built into one of China's largest state-owned forest bases.

The Xiaolong Mountain Experimental Forest Bureau, the administrative organization for the state-owned farms, was established in 1962 with the aim of finding ways for growing secondary forests.

Over the past three decades, local forest workers have planted about 193,333 hectares of trees, bringing the volume of timber reserves to 28.69 million cu m [cubic meters].

The forest farms have also cooperated with the Academy of Forestry Sciences and provincial scientific research institutes and worked out a set of sophisticated techniques for growing secondary forests.

At the same time, the state forest farms have also adopted a series of measures to encourage residents living around the farms to support the afforestation drive.

Relying on the rich resources in the locality, the Xiaolong bureau has expanded its operational scope from single tree-planting to diversified economic businesses, ranging from timber processing, animal breeding, tourism and transport to food processing.

#### **Premier Li Peng Calls for Efforts To Clean Huaihe River**

*OW2608080594 Beijing XINHUA in English  
0747 GMT 26 Aug 94*

[Text] Beijing, August 26 (XINHUA)—Chinese Premier Li Peng has called for efforts to clean up the Huaihe River, a major water network in east China.

The premier said this after hearing reports on a pollution accident in the river valley which has caused a drinking water shortage effecting hundreds of thousands of people, and an economic loss of more than 100 million yuan in Anhui and Jiangsu Provinces.

The pouring down of polluted water from Henan and Anhui Provinces on the upper stream since late July has taken its toll on 12 million kg of fish and 13,000 kg of crabs in lower valley areas, according to an official report.

The premier said all the enterprises along the river, no matter how big they are, will have to reduce effluents to acceptable standards by 1997, or they will be closed, though that may have an adverse effect upon the local economy.

The premier called for a stricter implementation of the environmental law, saying that enterprises causing serious pollution must be duly punished.

Since 20 August, the director of the State Bureau of Environmental Protection Xie Zhenhua, and Vice-Minister of Water Resources Yan Keqiang, have been in Jiangsu to investigate the accident.

#### **Qinghai Province To Produce Pollution-Free Foods**

*OW2608111194 Beijing XINHUA in English  
0817 GMT 26 Aug 94*

[Text] Xining, August 26 (XINHUA)—A pollution-free food managing office in northwest China's Qinghai Province was set up yesterday, indicating that the pollution-free food project has started on the Qinghai-Tibet plateau.

Pollution-free foods, meaning nutritious food from crops grown without the use of chemicals, are in vogue around the world.

The Qinghai-Tibet plateau is considered one of the best bases for growing such foods because of its fine natural conditions.

Qinghai Province, located in the northeastern part of the Qinghai-Tibet plateau, is already producing such foods such as Chinese prickly ash, honey, and mushroom.

The development and processing of the pollution-free foods have been listed as a priority task in the province. Five to ten different types of such foods are expected to be produced this year.

Meanwhile, protection areas, where only such foods can be produced, will be established.

China began developing pollution-free foods in 1993. So far, 181 bases for such foods have been set up and nearly 400 kinds of such foods have been produced all across China.

#### **State Council Adopts Draft Regulation on Nature Reserves**

*OW0209135094 Beijing XINHUA in English  
1314 GMT 2 Sep 94*

[Text] Beijing, September 2 (XINHUA)—A draft regulation concerning the protection of nature reserves was adopted in principle today by the State Council.

Premier Li Peng presided over the meeting, which stressed the importance of better protection of the nature reserves in accordance with the law.

According to the meeting, the regulation on nature reserves is of great significance in the effort to protect the natural environment and natural resources, and to maintain an ecological balance.

The meeting said that it is necessary to formulate a regulation in order to explore the law of natural evolution, to use natural resources in a rational way and to promote the development of economic construction, and the progress of science, culture and education.

The draft regulation consists of 44 articles, including general principles, and details of the construction and management of nature reserves and legal responsibilities.

The draft regulation will be revised before going into force.

### **China's Action Plan for Protecting Biological Diversity**

94WN0330A Beijing ZHONGGUO HUANJING BAO [CHINA ENVIRONMENTAL NEWS] in Chinese

[Article: "Biological Diversity: The Basis of Human Survival and Development"]

[28 Apr 94 p 1]

[Editorial Note] On 26 February of this year, the third session of the State Council's third Environmental Committee considered and passed in principle the China Action Plan for Protection of Biological Diversity. The drafting of the plan was coordinated by the State Environmental Protection Office and was carried out over a period of 2 years by more than 130 Chinese and foreign specialists from 10 departments, including the State Planning Commission, the State Science and Technology Commission, the Ministry of Finance, the Ministry of Forestry, the Ministry of Agriculture, the Ministry of Construction, the Ministry of Public Security, the State Oceanographic Bureau, and the Chinese Academy of Sciences. In June 1992, when the United Nations Environment and Development Conference adopted the Convention on Biological Diversity, Premier Li Peng was present to sign the document on behalf of the Chinese government. All signatories to the agreement must undertake to draft a strategic program for the protection of biological diversity in their countries. China is one of the countries that have taken the lead in carrying out this undertaking. The implementation of these strategic actions will have a positive influence on the sustainable utilization of China's biological resources and on the protection of world biological diversity. It is an important international document. The subject matter of the China Action Plan for the Protection of Biological Diversity includes: an analysis and evaluation of the current status of biological diversity in China, a description of the range of biological diversity, the threats to it, and the urgency of stepping up its protection, a systematic presentation and evaluation of existing protection measures, including in-situ protection, ex-situ protection, the organizational system, policies and laws, scientific research and the like, and a general overview of the specific plans of action for the protection of biological diversity in China. Beginning with this issue, we shall publish a serialized introduction to various implications of the China Action Plan for the Protection of Biological Diversity.

[28 Apr 94 p 1]

[Text] Biological diversity is the foundation of human survival and progress. Protecting biological diversity and

the perpetual utilization of biological resources is a global task and an important component of the global action program for environmental protection. Biological diversity refers to the sum total of all of the world's living organisms: plants, animals, and microscopic life. It includes three components: ecosystem diversity, species diversity, and genetic diversity. An ecological system is the functional unit formed by all living organisms and their environment. All species are components of ecological systems. There are many types of ecosystems, and all ecosystems maintain their distinctive ecological processes, consisting of the circulation of essential chemical elements and of energy flows between the components of the system. In ecological systems on all scales, from small to global, these ecological processes are critical to the survival, progress, and continuing development of life. Species diversity refers to the variety of species of animals, plants, and microscopic life. Species resources are the main objects of agriculture, forestry, stock raising, sideline industries, and fisheries. They provide man with materials essential to life and are the foundation of man's survival and development. Genetic diversity refers to the diversity of genes in individual organisms, in individual species, and between species. The genetic makeup of a species determines its characteristics, including its adaptability to a particular environment, and its characteristics that are usable by mankind. Genetic diversity is of major practical significance to human productive activity. Thus, it is evident that the protection of biological diversity can influence the development of a country, a region, or the entire earth, and can promote economic prosperity. This is why it is attracting the concern of international society and has become a central global environmental issue. China has a rich variety of biological species and has natural conditions that can promote the development of their ecological systems. Its biological diversity is of global significance. It is estimated that China has 11 percent of the world's total number of plant species, including 240 unique genera; it also has about 10 percent of the world's species of mammals, birds, reptiles, and amphibians. But the explosive growth of China's population, inefficient resource development, environmental pollution and ecological damage have had a heavy impact on all types of living organisms and their ecosystems, resulting in serious losses of biological diversity. We know that about 200 species of plants have already died out, and it is estimated that another 5000 species of plants are endangered in the near term. The condition of wild animals is even worse than that of wild plants. China's government has carried on unremitting efforts in the protection of biological diversity. As of 1991, more than 700 natural preserve areas had been set up nationwide, with a total area of 56 million hectares, or 5.6 percent of the country's area. In addition, many wild plant protection centers and wild animal artificial breeding areas had been set up, together with a variety of gene banks, and 354 species of rare plants and 257 species of rare and



endangered animals had been placed under special protection; this is equivalent to protecting a group of representative, typical natural ecosystems. In overall terms, China's biological diversity protection efforts are still in their initial stage, and they still face numerous problems and difficulties: the laws and the legal system for protection of diversity must be made more effective and implemented; management of existing natural protection areas must be improved, and management personnel are badly in need of training; the system of natural protection areas needs to be expanded so that it covers all of China's ecosystems; governmental organizations involved in biological diversity protection must be coordinated and means of effective cooperation must be worked out; scientific research on the protection of biological diversity needs to be expanded and improved; such problems as shortages of funding for the protection of biological diversity require appropriate resolution; and inadequate public understanding of and support for the protection of biological diversity must be corrected. At present, the overall trend of environmental pollution and ecological damage in China has not been brought under control, and unless more effective actions are taken, biological diversity will continue to be damaged. The China Action Program for the Protection of Biological Diversity was drafted under these circumstances and will assure that the problems listed above are considered and resolved in a systematic manner. It will become an element of the country's overall plan for social and economic development.

[30 April 94 p 2]

[Text] China's immense land area has a variety of climates and landforms, is crossed by rivers and dotted with lakes, and has extensive sea areas in the east and south. Its complex natural and geographic conditions provide a variety of environments for the formation and development of living organisms and ecosystems. Its forests, grasslands, deserts, farmlands, wetlands, and marine areas are major land types that form China's ecosystems. China's forest ecosystems can be classified as boreal conifer forests, temperate mixed conifer-broadleaf forests, warm-temperate zone deciduous broadleaf forests and conifer forests, semitropical evergreen broadleaf forests and conifer forests, and tropical monsoon forests and rain forests. China's grassland ecosystems include temperate grasslands, high-altitude frigid grasslands and desert mountain grasslands. The desert mountain grasslands are ecosystems with sparse vegetation that develops under conditions of little precipitation, rapid evaporation, and extreme aridity, located primarily in northwestern China and accounting for about a fifth of the country's area. They include sand deserts and gobis with an area of about 1 million square kilometers. The principal agricultural ecosystems are located in the southeastern part of the country and form a complex variety of types, with more than 30 grain crops, 200 vegetable crops, and 300 types of fruit trees, in addition to tea plantations, mulberry plantations, rubber plantations and the like. The principal wetland

ecosystems are lakes, watercourses, and marshes. China has many lakes, chiefly of large and middle size with areas of 50 square kilometers or more, containing a great variety of aquatic ecosystems. Marshes cover a total area of 14 million hectares. Many types of aquatic animals overwinter, breed, and take refuge in these wetlands. China's sea area covers three temperature zones. Its coastal shallow-water zone and continental shelf zone are extensive, and it also has coastal banks, coastal wetlands, river estuaries, islands, and deep-sea ecosystems. China's species diversity is directly related to the diversity of its ecosystems. Although Chinese scientists began to investigate animals, higher plants and lower plants in the 1930's and 1940's, we still lack knowledge of many species. In the case of the invertebrates and cryptogams, only a small fraction of the existing species have now been described in the literature. Since 1980, 500 new species of insects and 500 new species of angiosperms have been described. A total of 8300 species in the major taxa of living things have now been recorded in China, not including poorly understood soil organisms and a large percentage of the more than 100,000 species of insects that are still not well known. The marine species that have been described in China's sea areas number more than 13,000, representing more than a quarter of all species in the oceans. Genetic diversity is an important component of biological diversity. A species consists of many populations with a wide range of genetic variability, so that it has many genotypes. China has an extremely rich inventory of species and is one of the countries with the greatest genetic diversity. The survival capability of a species is directly related to its genetic diversity: small, isolated relict populations are more likely to be endangered or to die out than species with broad genetic diversity. When a species is discovered to be endangered, much of its genetic diversity has already been lost, and the likelihood of its survival has been decreased; it may already be too late to save it from extinction. Biological diversity is truly an extremely fragile resource. China is characterized by great species diversity with highly unique, ancient biotas and economic species. In terms of the diversity of its flora, China is surpassed only by Malaysia and Brazil, and many ancient varieties are unique to China. China has about 340 species of land vertebrates, 10 percent of the world's total; it has about 13 percent of the world's species of birds; China's seas contain members of nearly all of the more than 40 marine phyla and have a large percentage of the world's total number of species. China has many unique species and relict species; the ranges of these species very often are limited to small, distinctive biotopes. The investigation of these unique phenomena is of special importance for an understanding of the characteristics and development of the flora and fauna and for the priority fields of biological diversity protection and sustainable utilization. China has an extraordinary variety of economic species. It has more than 3000 important economic wild plants, many economic animal resources, and many valuable types of microorganisms. These biological

resources are indispensable to China's economic development and livelihood. China's biotas are extremely ancient and of complex origin, including many ancient or primeval families and genera. China's tropical and semitropical regions, especially the southwestern semitropical mountain zones, are likely to be foci of the origination and differentiation of many plant species.

[3 May 94 p 2]

[Text] Damage to and degradation of ecological systems caused by human activity constitute one of China's most serious environmental problems. The principal forms of ecological damage are shrinking forest areas, deterioration of grasslands, desertification and degradation of farm lands, soil erosion, degradation of the quality of offshore waters, an increase in the frequency of red tides, sharp decreases in economic resources, and growing severity of natural disasters. Forests are the form of land vegetation that covers the greatest area and has the greatest abundance of life in the ecological system. China's forest resources have long been subjected to indiscriminate cutting and overcutting, destructive reclamation efforts, and damage by insect pests. Their area, and especially the area of natural forest, has declined greatly. In 1971-75, the area of natural forests in China was 98.17 million ha, but by 1981-85 it had declined to 86.35 million ha. Hainan Island had 25.7 percent of natural forest cover in 1956, 18.1 percent in 1964, and 7.2 percent in 1983. Heilongjiang's key virgin forest regions had an area of 23.16 million ha in 1975 and only 12.38 million ha in 1985. In the southwest, Yunnan Province had 9.12 million ha of natural forest in 1975 but only 8.14 million ha in 1985. In the prairie zone, which occupies about a third of China's total area, the production of grass has fallen by nearly half during the last 20 years. In the grasslands of the semiarid zone, the production of grass has always been low, and overgrazing, destructive land reclamation efforts, and damage by rodents have made the deterioration extremely serious, so that the grassland ecological system is facing a grave decline. With the threat of destruction of the grasslands and the increasing frequency of wind-borne dust, the rate of desertification in northern China has accelerated, and the area converted to desert has increased greatly. In the 1950's, the desertified area of the Ordos Plateau covered only 20 million mu, while in the 1980's it had increased to 60 million mu, and in addition more than 40 million mu of grassland was experiencing serious soil erosion. China's aquatic ecosystems have also suffered severe damage. In the last 30-odd years, more than 7 million ha of coastal wetlands has been enclosed and reclaimed, and this factor, combined with natural silting and the filling in of water areas, has caused deep-seated and far-reaching harm to biological resources in extensive areas adjoining the reclaimed lands. In the 1950's there was 50,000 ha of mangrove forest on China's southern coast, but as a result of several decades of extensive reclamation and cutting, only 20,000 ha now remains, and some of this area has degenerated into semi-mangrove forest or sparse second growth. About a quarter of Hainan

Island's 1600 km of coastline consists of coral reefs, with abundant marine biological resources, but in the last 10 years, the inhabitants have removed material from the reef for lime production and for handicraft industries, with the result that 80 percent of the coral reef resources on Hainan Island's coastline have been damaged and the reefs are facing elimination in certain areas. Freshwater ecosystems have been seriously damaged by large water-engineering projects, electric power projects, and land reclamation. Large areas of wetlands in the lake regions of the Yangtze River valley have been converted to farmland; a total of 17 million ha of lake-area wetland has been reclaimed in Hubei, Hunan, Jiangxi, and Anhui provinces; Hubei, the "province of a thousand lakes," now has only 326 lakes, and the total area of its lakes has declined from 12.50 million mu to 3.55 million mu. The destruction of freshwater ecosystems not only has decreased the area of wetlands and of habitats for aquatic life, but also has reduced flood regulation capabilities, blocked the migration routes of certain economically important fish, and the like. Although China has abundant biological diversity, its rapid population growth and economic development have increased the demands that are made on resources and on the ecological environment, bringing many animals and plants into serious danger. About 398 species of vertebrates, representing 7 percent of all species in China, are currently endangered. It is estimated that 4 to 5 thousand species of plants, or nearly 20 percent of all species in China, are endangered or threatened. Animal species that have died out in China include the rhinoceros, Pere David's deer, the highnose antelope and the white-rumped leaf monkey, and extinct plant species include the cliff cypress, the yandang runnan tree, and the xiyucao. These species have been extinct for decades or centuries. The highnose antelope is generally believed to have died out in Xinjiang during the 1950's. The main threatened animal and plant species at present are the red ibis, the northeastern tiger, the south China tiger, the clouded leopard, the giant panda, the leaf monkeys, many species of gibbons, the dugong, the slope deer, and the white-flag dolphin; the snubnose orchid, the bipistillate orchid, the south-sea cycad, the Indian three-needle fir, ginseng, *Gastrodia elata*, and the yingsu peony. Of these, the red ibis was abundant over a rather large area in the 1950's, but now is found only in a very limited range and in very small populations. Not only have some economically valuable and sensitive aquatic species gradually experienced a contraction of their range or disappeared, but the fishable stocks of even the prawn, the sea crab, the hairtail, the large and small yellow croaker, and other economically valuable fishes have declined rapidly. Many forms of aquatic life are endangered or threatened. The genetic resources of cultivated plants in China are also seriously menaced. As a result of rapid economic advance and the development of seacoast areas, the ecological environment has been damaged to various degrees in all agricultural regions, and many valuable old varieties have disappeared as a result of the dissemination of superior varieties. Wild soybeans used to grow

throughout the Yellow River Delta in Shandong and the Three-River Plain in Heilongjiang, but now they are found only sporadically. In 1959, 318 varieties of vegetables were available in the Shanghai area, but in the 1990's only 178 remained, and similar changes are found in other cities. The superior Jiujin chickens and Dingxian pigs have disappeared, and the numbers of Beijing Glossy chickens have declined greatly. The unique Hainan humped ox and the Shanghai splayfoot ox have become very uncommon. The consequences of the loss of genetic resources are impossible to foresee.

[5 May 94 p 2]

[Text] Even though China has been more successful than many developing countries in controlling population growth, its huge population base results in an extremely large absolute rate of population increase, and this fact, in combination with continuously accelerating economic development, leads to a steady increase in China's demands on natural resources and in the resulting environmental pressure. Not only is China's population large in absolute terms, but its geographic distribution is nonuniform. The population is dense in southeastern half of China and sparse in the northwestern half. In Nei Monggol, Ningxia, Xinjiang, Xizang, Gansu and Qinghai the population density is only 14 persons per square kilometer, but the average for the rest of China is 142 persons per square kilometer. Thus, China's population has an immense effect on biological diversity and is a major factor leading to environmental damage. China's population growth and economic development have resulted in continuously increasing demands on natural resources. Overcutting of forests, the use of grasslands for crop raising, overpasturing, ill-advised enclosure and reclamation of lake areas, the reclamation of marshes, and overuse of land and water resources have harmed or even eliminated the environments of living organisms, adversely affecting the continued existence of species. Many species have disappeared, quietly and unnoticed. Surveys show that several dozen rare plant species, including the fringed hongdou, the downy polei, the hirsute zishu tree, and the saw-leaved zhujie, have died out, and only a few individuals of such species as the tianmu iron tree, the Baishan fir, and the yuanzi lotus survive. Serious damage to the reefs in the South China sea has caused the disappearance of fishes that inhabited them. In addition, invertebrates and lower plants that might someday have provided drugs to treat diseases have died off before man has become aware of them. The construction of large hydraulic engineering projects cuts off rivers and lakes, harms the habitats of aquatic life, and blocks the upstream migration routes of fish, threatening some species. The section of the Yangtze River from the Gezhouba dam to Nanjinguan is the spawning ground of the "four main fishes." When the river was blocked by the dam, such hydrologic conditions as flow speed and water temperature changed, resulting in a decline in the abundance of the fry of these four types of fish. Their abundance in 1980 was 15.7 percent of the 1960 figure, and the 1981

abundance was 59 percent of the 1980 figure. The construction of the dam blocked the route by which the Chinese sturgeon migrates upstream to its spawning grounds in the Jinsha River, and as a result, many Chinese sturgeon have been trapped in the section of river below the dam, where some of them have been killed by the turbulent waters. This has produced a serious threat to the existence of the Chinese sturgeon. Although individual microorganisms are small, they are highly dependent on their habitats and are sensitive to changes in them. As a result, the habitat damage caused by human impact has led to the disappearance of many types of microorganisms unnoticed by mankind. Rapacious overuse is another important factor that threatens the survival of species. Indiscriminate hunting is an extremely serious problem in some parts of China. For example, rhesus monkeys began to be captured in large numbers in the 1950's, and this factor, combined with the steady contraction in their habitats, caused a great decline in China's rhesus monkey populations from which they have not yet recovered. In addition, antelopes, wild deer and other animals that are sources of fur or hides have been excessively hunted and various fish resources were overfished, with the result that their species populations declined greatly or disappeared. The resources of the main economic fishes in China's offshore zone were declining as early as the 1960's, and in the 1970's they began to be overfished. As a result, the stocks of economically important fishes in the bottom and near-bottom zones of China's offshore waters have declined steadily. The situation is similar but even more serious in fresh-water lakes. The excessive collection of wild plants is another aspect of overuse. Recently, the digging of large amounts of licorice root in the prairies Nei Monggol, Xinjiang and Gansu has caused a major decline in its range. For example, in Bachu County, Xinjiang, a 1967 survey found that licorice root occurred over an area of 600,000 mu, but the stocks have now been exhausted in nearly half this area. The membranous milk vetch of Nei Monggol is a world-famous product, but it is now hard to find in the grasslands of the province. Many of China's unique edible or medicinal mushrooms, such as the Chinese caterpillar fungus, the glossy ganoderma, the zhusun and the Lushan shi'er are threatened with extinction as a result of overcollection. Environmental pollution has inundated many forms of life. Large amounts of industrial and agricultural wastewater are discharged into natural waters in the cities and countryside, atmospheric pollutants, especially acid rain, cause harm, and heavy metals and persistent agricultural pesticides have accumulated in the environment, so that many aquatic or land organisms and many types of ecological systems are threatened as a result of environmental degradation. Some 150 million mu of farmland in China, representing about 10 percent of all farmland, has already suffered visible pollution by industrial waste, and an additional 150 million mu has suffered chemical pollution. The combined economic loss from these two factors is at least 15 billion yuan. China's lakes and some of its major rivers have been seriously polluted by



industrial wastewater, and this is a major factor causing the destruction of the aquatic fauna. In the seas, pollution of coastal waters in particular is a major factor causing a decline in the number of species. In addition, the importation of species from abroad, the construction of new cities, dams and reservoirs, the development of new mining areas, earthquakes, floods, fires, blizzards, droughts and other natural disasters, ineffective laws, lax law enforcement or (the lack of applicable laws in some cases of damage to resources), a lack of strong coordination in the resource protection departments, and gaps and errors in management are further factors that threaten or destroy biological diversity.

[10 May 94 p 2]

[Text] In-situ protection is the most effective means of preserving biological diversity. In-situ protection is the use of various types of natural protected areas, including scenic areas, to protect valuable natural ecosystems and wildlife habitats, to protect the reproduction and evolution of the indigenous life of the ecosystem, and to maintain the flows of matter and energy and the operation of ecological processes within the system. China established its first protected area, the Dinghushan area, in 1956. Now more than 700 protected areas have been established, with a combined area amounting to 5.54 percent of the nation's territory. In addition, there are 480 scenic areas and 510 forest parks, many of which are important for the protection of biological diversity. China's natural protected areas fall into three categories in terms of their objectives: ecosystem protection areas, wildlife species protection areas, and natural and cultural heritage protection areas. The first two of these types are closely associated with the protection of biological diversity. Natural protection areas can be classified, in terms of their purpose and the level of the organization that organized them, as national, province-level (or municipality or autonomous-region level), city (or prefecture, autonomous-prefecture or league) level, and county or banner level. Of 77 national-level nature-protection areas, 56 belong to the forestry departments, 9 to the environmental protection departments, 7 to the marine departments, 4 to the agricultural departments, and 1 to the Chinese Academy of Sciences. Nine of the protected areas, namely, the Changbaishan area in Jilin, the Wolong area in Sichuan, the Fanjingshan area in Guizhou, the Shennongjia area in Hubei, the Wuyishan area in Fujian, the Bogedafeng area in Xinjiang, the Dinghushan area in Guangdong, the Yilinguole area in Nei Monggol, and the Yancheng area in Jiangsu, have been included in the International Biological Circle's protected area network. The Zhalong area in Heilongjiang, the Xianghai area in Jilin, the Dongting Lake area in eastern Hunan, the Boyang Lake area in Jiangxi, the Niaodao area in Qinghai, and the Dongzhai area on Hainan Island, have been designated major international wetland areas. China has 335 forest ecosystem protection areas, with a total area of 11.087 million ha; 12 grassland ecosystems protection areas, with a total area of 1.297 million ha; 8 desert ecosystem

protection areas, with a total area of 29.489 million ha; 16 continental wetland and aquatic ecosystem protection areas with a total area of 1.019 million ha; and 19 marine and coastal-zone ecosystem protection areas with a total area of 117,000 ha. If any ecosystem protection area is to be effective, it must be able to protect all the types of ecologies and species within it, but for historical, administrative and structural reasons, many protection areas have been specially created to protect wild animals and plants. China now has 280 protected areas for wild animals and plants, with a total area of 12.871 million ha. Although China has laid a foundation for in-situ protection of biological diversity, there are many problems that urgently require solution. The chief among them are as follows. China still lacks a biogeographic zonation scheme and an overall nature protection area program. The siting and size of some existing protected areas have not undergone a stringent scientific documentation process, and some of them are not ideally located. The existing protected areas were established under a variety of mandates and were accorded various levels of priority by governmental organizations, so that it is not yet possible to strike an overall balance of the degree of coverage given to the various types of ecosystems throughout the country by the protected-area system. In addition, legislation regarding natural protected areas is ineffective and its implementation is lax, the management systems for the protected areas are imperfect, the areas of management authority of the various departments are not clearly demarcated, conflicts between economic development and nature protection of the areas have not been suitably resolved, there is a serious shortage of funding for the protected areas, management organizations are not effective, management standards are low, there is a lack of incentive measures for personnel engaged in the protection of biological diversity. In-situ protection of species and ecosystems can assure that the whole system of plants, animals, and microorganisms is protected under original habitat conditions. In contrast, ex-situ protection can only assure that a single species is preserved, but nonetheless, this is an important emergency rescue measure for highly threatened species of plants and animals. Botanical gardens can be effective in protecting the biological diversity of plants. Since the 1980's, botanical gardens have been spreading rapidly in China, and there are now 110 of them, which preserve 23,000 species of higher plants, including 300 species listed in the Chinese Red Book of Plants (more than 80 percent of the species listed there). In the 1980's, China began to build local ex-situ protection stations and breeding centers for rare and endangered plants, and it has engaged in the protective breeding of rare and endangered wild plants, forest trees, fruit trees, ornamental plants, medicinal plants, agricultural crops, edible plants, and tea, mulberry and other economic plants. The ex-situ protection of wild animals is carried on primarily by zoological gardens, protection stations and breeding centers. China now has 175 zoological gardens of various sizes, which raise a total of 600 species of vertebrates; the total number of individual

animals in these facilities is more than 100,000. Many rare and endangered animals have been successfully bred. In addition, China has established 26 protection-oriented breeding and research centers and stations for threatened animal species. There are also 230 commercially oriented farms that raise deer, mink, eared pheasants, and the like. About 10 species that once were in danger of extinction, including the giant panda, the Chinese alligator, the red ibis, and the northeastern tiger, have begun to recover, and more than 60 threatened rare species of wild animals have been bred in captivity. Recently, China has also established breeding stations for the Chinese sturgeon, the Korean sturgeon, the white sturgeon, the white-flag dolphin, the giant salamander, and other threatened aquatic animals. Alongside rescue activities, beginning in the 1980's, China repatriated several originally species that had become extinct in China, including Pere David's deer, the Mongolian wild horse, and the highnose antelope. The current problems facing ex-situ protection of wild animals in China include the following. The existing botanical gardens and rare and endangered plant protection stations and breeding centers are too few in number and for the most part too small in size. As a result of policy-related and administrative factors, the zoological gardens are facing considerable difficulties in replenishing the stocks of wild animals, and a lack of mating pairs is a common problem. The cages and buildings of the zoological gardens are outmoded, the equipment is primitive, and population management is difficult. The construction of protective facilities for the ex-situ protection of wild animals is costly, and inadequate funding is a major problem.

#### **Conference to Discuss Population, Resources, Environmental Development in Pacific Area**

94WN0329B Beijing ZHONGGUO HUANJING BAO  
[CHINA ENVIRONMENTAL NEWS] in Chinese  
16 May 94 p 3

[Article by Fu Congbin [4569 3222 2430]: "Pacific Regional Population, Resource, and Environmental Development: Prospects and Policies"]

[Text] The population explosion, exhaustion of resources, and environmental degradation are three major problems facing mankind. They are closely inter-related to each other and they seriously hinder the development of humanity and of human society. The world's total population is now more than 5 billion, and in order to satisfy their growing needs for clothing, food, shelter and transportation, people must develop and use natural resources on a large scale. This causes rapid depletion of energy, water, land, biological and other resources. Intense human activity, rapidly developing industrial and agricultural production, and especially the inefficient and wasteful development and utilization of resources, have caused extremely grave damage to man's environment. Pollution of water, soil, and the air, and its possible global consequences, such as global warming

produced by the greenhouse gases, and the expansion of the ozone hole over the South Pole, present a threat to the health of mankind and to living things; and frequent climatic and other natural disasters, declining soil fertility and desertification, shortages of water resources, and the large-scale extinction of species not only are gravely threatening the basic conditions for man's current survival today, but will cause lasting and possibly irreversible harm to the environment of future generations. Mankind is already beginning to become aware of these serious developments and challenges and is actively looking for ways to deal with them. There is hope that by regulating his own behavior it will be possible to preserve natural resources and improve the ecological environment so as to allow the continued development of human society. The Pacific Ocean is the world's largest and deepest ocean, with a multitude of islands, a total area of 178.68 million square kilometers and a volume of 707.10 million cubic kilometers. It is the world's largest body of water. It contains abundant marine biological resources, marine-product resources, and mineral resources, is a huge global carbon reservoir, and is of great importance in the global moisture circulation and carbon circulation. Abundant marine sediments also contain a record of climatic and environmental changes and provide valuable information for the study of past global changes. The Pacific Ocean's natural environment makes it a major aspect of global environmental change. The Pacific region includes islands scattered through the ocean and the coasts of Asia, North and South America, and Australia that border it. It has the best-developed coastal belt in the world, which nourishes nearly half of mankind, with numerous peoples of different skin color, speaking different languages, with different customs and different social, cultural and historical backgrounds. The Pacific region includes ancient cultures whose history reaches back to remote antiquity, some of the nations with the most highly developed economies, and newly emergent industrial countries, as well as rapidly developing Third World countries. All have their distinctive population, resource, and environmental characteristics, and they share many common tasks. Bringing about coordinated social and environmental development is critical to promoting the continuity and stability of this region and the progress and prosperity of all of human society. The first Pan-Pacific Scientific Conference, held early in this century in order to assure that the Pacific Region would achieve sustained, stable development in a peaceful, safe environment, to expand scientific and technological cooperation and exchange in the region, to deepen the mutual understanding of its peoples, and to promote unity and friendship and the joint study of major problems that hinder the development of the Pacific region, gave rise to the Pacific Science Association. This private academic organization has held quadrennial Pacific Ocean scientific conferences and biennial plenary sessions, and in the 70-odd years of its existence has played a meritorious role in promoting scientific and cultural cooperation and exchange in the Pacific region. Its

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plenary meeting has become a major forum in which scientists and public figures in the Pacific region and experts from throughout the world with an interest in the development of the region can investigate and discuss both the Pacific region and global problems. "Population, Resources and Environmental Development of the Pacific Region: Prospects and Policies" is the general topic of the 18th session of the Pacific Science Association, to be held in Beijing in 1995. Its primary subjects are humanity's current population, resource and development problems with reference to the situation in the Pacific Region and the study of policies and suggestions aimed at promoting the further prosperity and development of the Pacific region in preparation for the 21st century, which is being called the "Century of the Pacific." In connection with this main topic, the plenary session will be subdivided into six main meetings and nearly 30 sectional and special meetings. The subject matter of the main meetings is as follows:

1. Global Climatic and Environmental Change: the effect of global changes on the Pacific region's climate, agriculture, and water resources, and on the development of its islands and coastal zones, and the involvement of the Pacific Ocean in global changes (water circulation, global chemical circulation).
2. Resource Development, Utilization, and Protection: the development and utilization of all kinds of resources of the Pacific region, resource protection, and ways of developing renewable resources.
3. Biodiversity: scientific aspects of the effect of environmental changes on biological diversity, and the development and protection of biological resources.
4. Alleviation of Natural Disasters: climatic disasters, earthquakes, and other natural disasters in the Pacific region, engineering and scientific aspects of their prevention and alleviation, and the effect of global changes on the frequency and severity of natural disasters.
5. Population, Education, and Culture: educational and health aspects of rapid population growth, and cultural exchange and development in the Pacific region.
6. North-South Cooperation and Sustained Development: problems of the sustained development of countries and ways of intensifying cooperation between the developed and developing countries in order to promote the progress of human society.

Eminent scientists, politicians, and public figures of the Pacific region will be invited to discuss policies and macroscopic strategies for dealing with these pressing questions and to offer preliminary concepts and constructive suggestions for solving the problems. The sectional and special meetings will deal with more detailed and specialized aspects of natural science, social science, engineering, education, public health, and the like; authorities from various areas and experts from international scholarly organizations will engage in free-ranging discussion, exchange of opinions, and joint studies. The

sessions will be keynoted by the plenary meetings, and the sectional and special meetings will be held concurrently with each other in several locations. Chinese and foreign participants in the conference will number more than a thousand. The Pacific Science Association conference is a major integrated, multidisciplinary international conference. In order to fully express and broadly publicize the subject of the conference, the deliberations and discussions at the meetings will be publicized, and in connection with the main topic of the conference, the organizers will also arrange a series of cultural expositions and performances that will present distinctively Chinese customs and popular traditions. These will include a variety of dance and musical performances, exhibits of cultural treasures, calligraphy and painting, and displays of national costume and minority life that express the brilliant culture of the ancient civilizations of the east, as well as a variety of entertainments and excursions. In addition, scientific excursions connected with the subject matter of the meeting will be arranged. Subjects will include the rise in sea level at the mouth of the Changjiang River and in Hangzhou Bay and the protection of the coastal zone, integrated desert management in Northwest China, the Qinghai-Xizang Plateau, state natural protection areas and state preserves, and optimum utilization of water resources and environmental protection in the Three Gorges area of the Yangtze River. This conference is a forum for regional academic and cultural exchange and is also an opportunity to display China's research results in the population, resource, and environmental fields. Chinese scientists, engineering and technical personnel, and persons from all walks of life are welcome to participate. Controlling population, attaching due importance to the environment, and making optimum use of resources are the keys to human society's sustained development and its advance toward the new century. It is to be hoped that our efforts can make a contribution to today's world for the benefit of future generations and for the future of mankind.

#### **1994 Pollution Prevention and Control Plan**

94WN0329A Beijing ZHONGGUO HUANJING BAO  
[CHINA ENVIRONMENTAL NEWS] in Chinese  
21 Apr 94 p 1

[Article by Reporter Liu Xiaojun [0491 2556 6511]:  
"This Year's Pollution Prevention and Control Plan  
Makes Its Appearance"]

[Text] Last year's national environmental protection plan was essentially accomplished, and this year's environmental protection plan has now been handed down at a national planning conference. The total investment in pollution management will be 5.6 percent higher than last year. In 1993, the overall rate of processing of industrial waste gas and wastewater and the overall rate of comprehensive use of industrial solid waste were respectively 79.6, 68.6, and 59.4 percent, slightly higher than in the preceding year. Emissions of fly ash and

wastewater and the output of solid waste per 10,000 yuan of industrial output were respectively 0.047, 118, and 3.09 tons, down respectively 2.1, 4.1, and 4.9 percent from the 1992 figures. Environmental quality in the country's 37 focal environmental protection cities remained essentially stable, and certain environmental quality measures improved in such cities as Beijing, Shenyang, Changchun, Nanjing, Jinan, Chongqing, and Kunming. The 1994 national environmental plan and supplementary plans have now been issued. As economic growth continues its steady acceleration, the cognizant departments hope that all regions and departments will accord increasing importance to environmental protection, will tighten management and increase spending, and will continue to strengthen their capabilities for preventing and controlling pollution. The nationwide rates of treatment of waste gases and wastewater and of comprehensive management of solid waste in 1994 are scheduled to increase by respectively 1, 1.2, and 0.9 percent, and the rate of compliance with industrial wastewater emission standards will increase by 0.6 percent. The total national investment in pollution control will increase by 5.6 percent from the previous year. Emissions of flyash and wastewater and output of solid waste per 10,000 yuan of industrial output will be lowered by respectively 2.1, 2.5, and 5.2 percent. Environmental quality will essentially remain stable in most cities, and there will continue to be some improvement in the environmental quality of certain large and medium-size cities. The geographic area covered by environmental protection measures will expand by 0.8 percent to 6.3 percent of the country's total area. At this year's national planning meeting, the State Planning Commission issued some special policy measures dealing with environmental protection. In explaining these measures, the commission emphasized that all localities must follow state-issued environmental protection plans and make the planning targets an important component of the environmental objectives responsibility system at all levels of government. They must conscientiously implement the environmental protection plans down to the level of the localities, p73 departments and pollution-emitting units, and must induce the enterprises, especially large and medium-size polluters, to draft and implement specific plans in accordance with the government's environmental objectives and environmental laws. Pollution control items and "three-simultaneous" items must be included in the economic and social development plans for all localities, and effective work must be done in implementing specific deadline-based pollution control plans and major-polluter control plans. In the second group of deadline-based environmental pollution control projects handed down by the state, all localities and cognizant departments must conscientiously supervise and oversee the activities, in accordance with their jurisdiction, in order to assure that control assignments are completed on time. If deadline-based control plans for 1993 or before are not yet completed, all localities must continue to implement them and strive to speed up their progress.

### **Xiamen Pilots in Controlling Sea Pollution**

*OW0509121294 Beijing XINHUA in English  
0720 GMT 5 Sep 94*

[Text] Xiamen, September 5 (XINHUA)—The Chinese Government has designated Xiamen, Fujian Province, to pilot in a program to control pollutants in the east Asian sea areas.

Xiamen is one of China's five special economic zones and an ancestral home for Overseas Chinese.

The program to prevent and control pollutants in the east Asian sea area was put forward by the United Nations Development Program (UNDP) and the Global Environment Fund in line with the call by east Asian countries to enhance ocean environment protection.

Attending the program are China, the Democratic People's Republic of Korea, Brunei, Cambodia, Vietnam, the Philippines, Indonesia, Singapore, Malaysia, and Thailand.

A city official said that Xiamen is trying out the overall control of pollutants in the sea and collect experience for east Asian countries during the period from 1994 to 1998.

So far the city government has set up an executive committee and an expert committee to oversee the sea environment protection.

### **China Makes Headway in Major Afforestation Projects**

*OW3108164394 Beijing XINHUA in English  
1506 GMT 31 Aug 94*

[Text] Beijing, August 31 (XINHUA)—Much progress has been made in China's seven major afforestation projects aimed at controlling water loss, soil erosion and desertification, according to Xu Youfang, minister of forestry.

The projects cover 5.78 million square kilometers or 60 percent of China's total land area. They include the north China's shelterbelt known as Green Great Wall, the shelterbelt along the upper and middle reaches of the Chang Jiang river, afforestation projects along southeast coastal areas, major plains, the Taihang Mountain area as well as projects of fast-growing timber production and desert control.

The north China shelterbelt covers 42.8 percent of the land area in north, northeast and northwest China, spanning 7,000 kilometers. Construction of the project has entered the second phase.

The project has raised forest coverage from 5.2 percent in 1978 when the construction started to the current 8.6 percent, bringing soil erosion and desertification on a large area under control. The effort has also served to increase grain output by 10 to 30 percent and grass output by over 20 percent in the project areas.

The Chang Jiang river shelterbelt, another major greening project, is also underway in 200 counties of 11 provinces. Six billion yuan of investment has been poured into the project and about 4.48 million hectares of trees have been planted along the river.

In southeast China's coastal areas, another greening project is under construction with the aim of planting trees on a 82,000 kilometer area by the year 2010. Now work on 14,000 kilometers of coastline has been completed.

In north, northeast and central China's plain areas, work is full steam ahead with afforestation in 915 counties. The project has caught the attention of the international community as overseas inspection teams from 55 countries and regions have visited the project since it was initiated.

As one of the global environmental protection projects which has been listed in China's Agenda 21, the Taihang Mountain greening project has started in over 100 counties in Shanxi, Hebei, Beijing and Henan. The aim is to raise the area's forest cover from 15.3 percent to 43.6 percent in the upcoming eight years.

China plans to improve 670,000 hectares of sand-affected land within ten years, according to Xu. By now, 1.7 million hectares of such land has been harnessed.

Besides, China has planted 3.3 million hectares of fast-growing and high-yielding timber forest in 16 southern provinces. A project with 300 million U.S. dollar loan from the World Bank and 200 million U.S. dollars from the domestic institutions, has been completed. Recently, the world bank has decided to provide another 200 million U.S. dollar loan for the construction of a "forest resources development and protection project".

"It is not easy for China to host the forest resources when those in the whole world are dwindling," said Xu Youfang.

The minister attributed the historical changes to China's forest industry to the enhanced awareness by the central and local government in afforestation.

He said China has built a complete system in the construction of ecological projects and comprehensive

forest industrial system which integrates afforestation, bio-diversity protection, desert control, forest production and diversified economic development.

China has built 4,200 state-run forest farms, 2,100 nurseries of young plants, 501 nature reserves of wild animals and plants and 313 national forest parks.

Over the recent decade, China's afforestation has been growing at a rate of 5.3 million hectares annually. Besides, China plants new trees on 16 million hectares of hills by sealing up the hillsides to facilitate afforestation and plants another 2.4 billion new trees a year.

At present, China boasts 33 million hectares of artificially planted forest, leading the world in forest growth and increased amount.

With 39 years in history, China has planted trees by aerial seedings in 20 million hectares of land areas. By now, 15 million hectares of trees sown by aerial seeding are growing well, according to the Ministry of Forestry.

Despite the great achievement China has made in afforestation, the minister admitted, it can still not meet the needs of the national economic growth and environmental protection.

Xu said China is faced with three major contradictions in forest construction. Currently, he said, China has 130 million hectares of forest. However, another 130 million hectares of land are still available for afforestation, which will cost a considerable sum of money from China's tight budget.

Meanwhile, China is a large country with a population of 1.2 billion. Its per capita standing stock is only ten cubic meters, still one of the least in forest reserve. With the rapid economic development, contradictions between timber demand and supply will loom larger, he said.

"The awareness of environmental protection has been greatly enhanced in the international community since the environment conference in Stockholm 20 years ago in which the role of forestry in environmental protection became the focus of special attention," said Xu Youfang.

He said China will make best use of the upcoming seven remaining years of this century to bring its forest production to a new high.



## REGIONAL AFFAIRS

**ROK, Japan, PRC, Russia To Adopt Regional Environment Plan**

SK3008063194 Seoul YONHAP in English 0617 GMT 30 Aug 94

[Text] Seoul, Aug 30 (YONHAP)—South Korea, Japan, China and Russia will meet in Seoul next month to adopt the first action plan on regional environmental protection, officials said Tuesday [30 August].

Vice minister-level officials from the four countries will hold an inter-governmental "Northwest Pacific Action Plan (NOWPAP)" Conference here from 12-14 September.

North Korea was also invited but is unlikely to attend, according to the officials.

The conference is expected to adopt an action plan on preventing marine pollution in the Northwest Pacific and to agree on three separate resolutions for the plan's implementation, they said.

Specific issues will include marine life preservation, stopping the flow of land-derived pollution into the sea, and preventing contamination of the ocean.

The three implementation resolutions will call for a prioritizing of regional projects to evaluate the status of water quality, the staging of a NOWPAP Conference every other year and the settling of financial cost-sharing, the officials said.

## AUSTRALIA

**Minister—Greenhouse Gas Emission Goals 'Not on Track'**

BK0709075094 Melbourne Radio Australia in English 0500 GMT 7 Sep 94

[Text] Figures released today show that Australia is unlikely to meet its targets for cutting greenhouse gas emissions. The figures show Australia remains among the five worst countries in the world for producing greenhouse emissions.

Federal environment minister, John Faulkner, has released the figures which show Australia is not on track to keep greenhouse gases at the 1988 level. Louise Yaxley reports:

[Begin Yaxley recording] In 1990, greenhouse gas emissions were equivalent to 572 million tons of carbon dioxide—or about 19 tons every second. The energy sector, including coal-fired power stations and transport, contributed about half, but land clearing is also adding substantially to the total.

Senator Faulkner says Australia can meet its targets if more gas reduction measures are put in place. The government plans to find more ways to cut emissions by

the end of this year. He has not ruled out energy taxes, but says all measures need to be looked at. [end recording]

## CAMBODIA

**Officials Tour Kratie, View Logging Export Operation**

BK0709033794 Phnom Penh National Radio of Cambodia Network in Cambodian 2300 GMT 6 Sep 94

[Text] His Excellency [H.E.] General Nhim Vanda, special envoy of the prime ministers of the Royal Government of Cambodia, and H.E. Tau Senghuo, state secretary for agriculture, forestry, wildlife, and fisheries and co-chairman of the commission on control of logging and sawing throughout the country, recently made an inspection tour of Kratie Province. The delegation paid a solicitous visit to the officials, armed unit, and national police force in the province.

H.E. Nhim Vanda and H.E. Tau Senghuo took turns talking about the latest situation and development in the Kingdom of Cambodia under the leadership of the two samdech prime ministers. They praised the province for its recent progress and achievements and urged provincial officials and forces to enhance further their attention to ensuring security for the people.

During their working visit to Kratie Province, accompanied by the provincial governor and his deputy, H.E. Nhim Vanda and H.E. Tau Senghuo also inspected logs in Prek Prasap District that could not be exported in a timely manner.

It is worth noting that the logs, whose volume amounts to 50,000 cubic meters, is under the management of the Indonesian [name indistinct] company. Of the 50,000 cubic meters, only 9,000 are properly tagged and authorized for export.

H.E. Nhim Vanda and H.E. Tau Senghuo will request an urgent decision from the two prime ministers to speed up the export of the authorized logs. As for the 41,000 cubic meters of logs that have not yet been authorized and on which tax has not yet been paid, they will be seized by the commission on control of logging and sawing.

## INDONESIA

**Editorial Notes Impact of Environmental Destruction**

BK0209123594 Jakarta MERDEKA in Indonesian 13 Aug 94 p 6

[Editorial: "Environmental Destruction Has Become Serious"]

[Text] The statement by Sarwono Kusumaatmaja, Minister of State for Environment, last Wednesday [10 August] in Serang, West Java, concerning environmental destruction in Indonesia and its connection with the

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macroeconomic indicators has left us worried and concerned. Why shouldn't we feel concerned if nothing is done to halt the destruction of mangrove swamps, the coral reefs along the coastline, hills, fishes, maritime species, and the discharge of industrial toxic waste by irresponsible and inconsiderate people?

The rapid rate of the development process has created problems. For example, the Serang regency has set an 8-percent development growth rate target. Unquestionably, environmental conservation will be affected as a result of trying to reach that objective. Where do the raw materials originate for the construction of roads, bridges, and buildings if they were not obtained as a result of environmental denudation that depleted its landscapes? We should give due consideration to such a fact in the face of environmental destruction and the impact it will have on public health, which in turn could shorten people's lifespan. Therefore, Sarwono's conclusion was that Indonesia's macroeconomics indicator has yet to include a supporting "fund" as a result of the environmental destruction.

In other words, has the fund, which should be utilized to satisfy Indonesia's macroeconomic demand, been calculated to cover the cost of the environmental destruction? This was probably one of the reasons Sarwono stated that the issue of environmental destruction and pollution had not yet been integrated with the national and regional development plan. Such an issue should be conscientiously resolved, considering the impact it will have on the country's economic growth.

In fact, Sarwono clarified that Indonesia is not the only country facing the monopoly problem; other Third World developing countries are facing the same dilemma. During the past colonial era, it was considered that if people depended on forests and land resources for their livelihood, it was tantamount to "robbing the environment." The Dutch considered the Indonesian farmers' year-long cultivation practice—without even allowing the land to lie fallow, let alone replenish it with fertilizer and other necessary ingredients—an act of roof-opbouw, which means robbing the fertile land, or in other words "cultivation by robbing the rich and fertile land resources." But currently, such an act is considered one of implementing development by robbing the natural environment through the use of explosives to destroy mountains, coral reefs, the depletion of mangrove swamps and tropical forests, including the destruction of fertile land, just for the sake of developing the industrial sector.

It is strange that we are witnessing the continuous environmental destruction process being carried out in a nonchalant, rampant, and open manner. Such a situation has confused us in spite of our investigations into the issue and our effort to present facts on such destruction. This points to the fact that we are only concerned with developing infrastructural projects needed for our rapid national development and its growth. Unquestionably, we will have to pay a high price for such development by

sacrificing our country's continuous environmental existence. Closer scrutiny will indicate that the foreign loans were mostly utilized for development purposes. Therefore, we will finally end up by sacrificing our future generation's heritage—the natural environment. We have not conscientiously given serious thought to conserving our "food sources" for future generations.

This is probably the first occasion that a person has been courageous enough to say that Java Island, which should have only about 22 million residents, is currently inhabited by approximately 100 million residents. It seems that no solution is currently in sight for solving Java Island's population problem. If we allow such a problem to linger and if we remain unwilling to solve it in a practical and modern manner, then most of the nation's population will converge on the island living in apartments, cluster houses, condominiums, high-rise buildings, and probably in underground dwellings and tunnels, while the other islands will be left uninhabited by the end of the Second 25-Year Long-Term Master Plan. As a result, we will have to exist on an absolutely overcrowded island with daily traffic jams from Serang to Banyuwangi while forgetting that Indonesia is our country. By that time, the Java islanders would have to import clean drinking water and fresh air.

## JAPAN

### MOFA's 'Information War' With Greenpeace

OW3008010194 Tokyo MAINICHI SHIMBUN  
in Japanese 22 Aug 94 Morning Edition p 22

[Eighth in the series "Rabbits' Ears and Doves' Dreams"; this installment entitled "Post-Cold-War Battle Is Over Environmental Issues; Nations Shaken by Greenpeace's Challenge"]

[Text] The "Information War" is spilling over the framework of nations.

It was London, 8 November 1993. At the 16th meeting of the signatories to the London Treaty, held at the International Maritime Organization (IMO) headquarters, Japan's Ministry of Foreign Affairs (MOFA) effected changes in two of its policies.

One of the two was that the ministry for the first time supported the organization's resolution on "the total ban on dumping of low-level radioactive wastes into the sea." A month before the meeting, Russia had dumped radioactive wastes into the Sea of Japan, and Japan was concerned about the impact of the pollution.

"It was a good speech." Saying this and smiling, Naoki Ohara, general secretary of the international environmental organization Greenpeace Japan, approached Yoshitaka Kawamura, counselor of foreign affairs in the ministry Foreign Policy Bureau, who had just completed making an announcement in support for the resolution. The two exchanged their name cards and this was the start of their communication with one another.



The second of MOFA's two changes in its policies was this exchanging of information with Greenpeace, with which the ministry had clashed over the whaling and plutonium shipment issues.

MOFA had the bitter experience of having been beaten by Greenpeace in gathering information on the Russian nuclear waste dumping incident.

On 17 October last year, a Greenpeace ship videotaped a Russian vessel dumping radioactive wastes in the Sea of Japan. When the film of the scene was broadcast on television news programs, personnel of the MOFA Scientific Affairs and Nuclear Energy Division stared at their television screens in awe. This news, coming out of the blue, plunged the ministry into panic, and it took one whole day for the ministry to confirm the dumping.

In a session of the lower house Foreign Affairs Committee three days later, voices of reproach ensued on MOFA's lack of information collection capabilities. Even within the ministry criticism was severe. Shunji Yanai, director general of the Foreign Policy Bureau, was angry at his people, saying, "I have told you to keep in touch with Greenpeace. Now this is what happens."

This was MOFA's defeat in an information war with a nongovernment organization.

This was not the first defeat for the ministry either.

The event was a general meeting of the International Whaling Commission (IWC) in 1982, and delegates from such small, unfamiliar countries as Antigua, Barbuda, and Belize were at the meeting. They were busy consulting Greenpeace while the session was in recess.

Yoshito Umezaki, a journalist specializing in the fishery industry, who was there to cover the event, asserted, "Greenpeace has pulled these countries over to its side with the power of money, and has secured enough votes against whaling." In that meeting, a proposal to put a moratorium on commercial whaling was approved by a majority vote, and the Japanese fishing industry was driven into a difficult position.

In November 1992, even though Japan kept the navigation route for the Akatsuki top secret, the carrier of a plutonium shipment, Greenpeace found the ship and reported in detail how it was tracking the boat.

Then in March last year, the organization shocked the Science and Technology Agency by bringing out the contents of the "Yavrovok Report," which detailed the status of nuclear waste dumping by Russia. Aleksei Yavrovok, the author of the report and an environmental issues adviser to President Yeltsin, was once a director of Greenpeace Russia. Greenpeace insists "he is not the source of the information," but it can be said that the incident tells something about its information network.

Greenpeace has chapters in 30 countries across the world, and deals with global-scale environmental issues. The organization, with about 1,000 paid staff members

working, has a budget of about \$150 million (about 15 billion yen) a year, and has its headquarters in Amsterdam, Holland. It has about 4 million members, called "supporters." But details of its organization or financial resources are not known.

Some of the countries which have been made a fool by Greenpeace have tried to strike back.

A television station in Denmark had an oceanography scholar at the University of Miami of the United States testify in a special program that "Greenpeace has entertained delegates of Latin American countries in order to sway them over to its side in the IWC meeting." The U.S. magazine *FORBES* reported that "Greenpeace's film used in campaigns against seal hunting is a fabricated product, using hired people to act out scenes of animal abuse." Greenpeace refutes such allegation as "groundless."

Greenpeace Japan Secretary General Kohara was full of fighting spirit as he said: "In the end, the environment protection campaign is a battle. The other camp is stepping up its publicity campaigns. We must muster enough support to fight the lobbyists of the industry."

Kunio Yonezawa, adviser to Nippon Suisan Kaisha [Japan Fisheries Inc.], which opposes Greenpeace on the issue of whaling, said: "As a result of the collapse of communism, the remaining organizations which are international in nature are the environmental groups like Greenpeace. Greenpeace is now the only force which confronts capitalism in the post-Cold War world, and it is beginning to have an influence on the national legislatures and international conferences."

Next February, high-level radioactive wastes will be shipped to Japan from France. A local French newspaper carried a small article which reported on the activities of Greenpeace and describes the shipment of the wastes as a "Chernobyl on the Sea." A copy of the article was distributed to the Science and Technology Agency and the Federation of Electric Power Companies, which are subjects of protest as regards the shipment of the material. Japan's antenna has begun to operate in preparation for the challenge from Greenpeace. "They are coming again."

#### **Funds Sought for Environmental Research in Antarctic**

*OW3008082494 Tokyo KYODO in English 0732 GMT 30 Aug 94*

[Text] Tokyo, Aug 30 KYODO—The Education Ministry is seeking in its budget requests for fiscal 1995 appropriations to launch a program for long-term environmental monitoring in the Antarctic, ministry officials said Tuesday [30 August].

The ministry has decided to set up a new research laboratory for the National Institute of Polar Research in Tokyo to study global environmental changes from the Antarctic during the next 20 to 30 years.

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Until now, research at the Showa base in the Antarctic has been relatively short three- to five-year projects focused on natural phenomena unique to the continent.

The new project will concentrate on longer-term, wider-range studies of the atmosphere, oceans and living things.

The lab, to be staffed by five employees in the initial year and eventually increased to 12, will monitor ozone holes, carbon dioxides in the atmosphere and ecological phenomena.

#### **Observation Satellite To Carry Ozone Sensor**

*OW0509115294 Tokyo KYODO in English 1133 GMT 5 Sep 94*

[Text] Tokyo, Sept 5 KYODO—The Environment Agency said Monday [5 September] it delivered a specially developed ozone sensor for inclusion in an observation satellite which the National Space Development Agency is scheduled to launch in winter next year.

The sensor, known as improved limb atmospheric spectrometer (ILAS), has a length of about 1.6 meters and a weight of about 130 kilograms.

The sensor is designed to analyze the spectrum of the sun's rays that penetrate earth's atmosphere and to relay information about densities of ozone between 10 and 60 kilometers above the North and South Poles, as well as nitrogen dioxide and methane.

The data relayed back to earth will provide more information about the ozone layer in the stratosphere.

The agency will include the sensor in its advanced earth observing satellite (AEOS).

The sensor, which has the advantage of being able to analyze a large number of substances, is more accurate than previously used instruments.

The entire payload, including other sensors the satellite will take, will now be tested in readiness for launching on a H-2 rocket in winter next year.

The sensor is expected to send back data for three years.

#### **Environment Agency Seeks Eight Percent Budget Boost**

*OW0109133094 Tokyo KYODO in English 1240 GMT 1 Sep 94*

[Text] Tokyo, Sept 1 KYODO—Government ministries and agencies are seeking total budgetary funds of 591.8 billion yen for environmental protection for the fiscal year starting next April, up 8.0 percent from the current year's budget, the Environment Agency said Thursday [1 September].

The 343.6 billion yen requested by the Science and Technology Agency accounts for the largest portion of

the total funding request for environmental protection submitted by 17 ministries and agencies to the Finance Ministry on Wednesday.

The science agency, which is promoting nuclear power generation as a means to curb the greenhouse effect, is seeking a 7.8 percent increase in its environment-related budget for the next fiscal year.

The Ministry of International Trade and Industry is requesting 159.8 billion yen, up 9.3 percent, while the Education Ministry is calling for a 4.2 percent boost to 45.8 billion yen.

Funding requests for preserving endangered species posted the largest growth of 101 percent, followed by requests for an 85.7 percent increase in funds to cope with toxic wastes.

Among new projects proposed in the budget requests is a joint project with China to protect the Japanese crested ibis in China, which is on the verge of extinction.

#### **Countries To Back Northwest Pacific Marine Environment Plan**

*OW0109114594 Tokyo KYODO in English 1125 GMT 1 Sep 94*

[Text] Tokyo, Sept 1 KYODO—Representatives of nations bordering the northwest Pacific will gather in Seoul on 14 September to adopt a UN-sponsored action plan for the protection of the marine environment in the region, government officials said Thursday [1 September].

Experts from China, Japan, North Korea, South Korea and Russia have met three times in the past to discuss the Northwest Pacific Regional Sea Program, which focuses on the protection of the Sea of Japan and the Yellow Sea.

But Pyongyang, which protested the decision that the final meeting be hosted by its rival, South Korea, has said it will not attend. The other four countries are expected to adopt the program, the officials said.

The action plan was initiated by the UN Environment Program, which since 1974 has designated 13 oceans and coastal areas for environmental protection.

The multilateral agreement has special significance, as Japan and North Korea do not have official relations, which virtually rules out the conclusion of treaties, the officials said.

If North Korea attends the Seoul meeting, however, it could help revive the stalled bilateral dialogue with Japan, they said.

Since normalization talks between Japan and North Korea broke down in November 1992, official contacts have been limited to the UN General Assembly and similar international venues.

## SOUTH KOREA

### President Urged To Establish Environment Protection Program

SK3008020294 Seoul THE KOREA TIMES in English  
30 Aug 94 p 2

[Text] The National Advisory Conference on Science and Technology yesterday recommended President Kim Yong-sam form a body responsible for planning "Korea Agenda 21," an action program for a development that is balanced with environment protection for the 21st century that the President will oversee.

The advisory conference headed by chairman Yi Sang-hui also called for the preparation of legal and institutional systems to stimulate the education of talented and gifted children to cope with ever-sharpening international competition.

Every nation was enjoined to draw up such an action programs by the agreement on the protection of the global environment in the international meeting in Brazil in 1992.

Chairman Yi advised President Kim that the strategy for global environment conservation jointly planned by South and North Korea, China and other Asian countries be included in the proposed "Korea Agenda 21."

### Nations Debate Over Fishing at UN Conference

SK2608040894 Seoul YONHAP in English 0205 GMT  
26 Aug 94

[Text] United Nations, Aug 25 (YONHAP)—Over 100 nations and international organizations are in near agreement that fishing within the 200-nautical-mile economic zones should be controlled to preserve depleted fish stocks, South Korean officials at the UN Mission said Thursday.

But differences still exist over how far punishment should go for vessels that violate the rules, with some insisting on allowing seizure and detention, they said.

Some 90 countries and 30 organizations are attending the third UN conference on overlapping and highly migratory fish stocks, with coastal and deep-sea fishing nations in dispute over imposing regulations on marine life preservation.

Because some of the stocks move across the boundaries dividing the open seas from economic zones, the scope of fishing limits in these two different zones emerged as the key question.

South Korea, a deep-sea fishing country, advocates controlled fishing not only in international waters but in economic zones where over 90 percent of the world's catch is taken, the officials said.

But the participating countries were still split over whether to allow coastal nations to capture and detain illegal vessels, they said.

"Our government's position is that on-board inspection of fishing boats is acceptable, but seizure and detention are not," said one South Korean official. "The tendency, however, is to allow capture and detention within the zones."

The United Nations will hold two more conferences next year to settle points of conflict, but the officials said the differences are not prone to easy solution.

### Air Pollutants Declining in Most of Country

SK0309035194 Seoul THE KOREA TIMES in English  
3 Sep 94 p 3

[Text] The generation of air pollutants has been declining in most parts of the country but heavily-populated areas, such as the metropolitan district, but regions with a high concentration of industrial facilities continue to play host to severe air pollution.

The presence of pollutants such as sulfur dioxide and carbon gases are definitely on the decrease despite insistent industrialization, mainly due to the use of low-pollution sources of energy.

In an annual report presented yesterday, the Environment Ministry said the total amount of air pollutants registered 4.583 million tons last year, down from 4.867 million in 1991 and 4.868 million in 1992.

"The encouraging finding was that there was a general reduction in the production of all types of pollutants, with the unfortunate exception of nitric gases, indicating that the use of clean fuel and other anti-pollution activities are paying off," one official observed.

In Seoul, where more than a fourth of the total population live, the generation of air pollutants fell sharply from 874,000 tons in 1991 and 741,000 tons in 1992 to 534,000 last year, the report indicated.

### Package To Set Up Environment-Related Trade Barriers Noted

SK0309024294 Seoul THE KOREA HERALD  
in English 3 Sep 94 p 8

[Text] The Ministry of Trade, Industry and Energy (MOTIE) yesterday announced a package to cope with the move among advanced nations to set up environment-related trade barriers.

According to the ministry, an international standard for environmental management by firms is being promoted by the International Standard Organization (ISO) for application starting late 1995.

The standard, commonly called the ISO 14000 series, is expected to exert a far-reaching influence upon the domestic industry, although it is, as the ISO 9000 series on quality management, not an obligatory provision.

Some advanced countries may link environment with trade, using the new standard as a kind of nontariff barrier to trade.



To cope with this possible threat, the ministry plans to work out a Korean model of environmental management system (EMS) and apply it to domestic firms beginning next year.

The EMS calls for continuous efforts by firms to identify the detrimental impact that they cause on the environment in the course of productive activities and voluntarily take steps to reduce the impact.

Under the EMS, each firm is required to set specific management goals regarding environmental protection and regularly check whether it has attained the goals or not.

According to the ministry, the envisioned ISO 14000 standard will consist of two parts, one for corporate management and the other for specific products.

As the standard for corporate management is expected to be completed first, the EMS model will first focus on overall environmental management.

Then, it plans to induce firms to gradually shift from energy-intensive products to low-energy products that cause less damage to the environment.

Meanwhile, the Industrial Advanced Administration (IAA), for its part, has been making preparations to begin issuance of ISO 14000 certificates from 1996.

According to IAA, such countries as Australia and the Netherlands have already begun issuing environmental management certificates based on their own standards.

IAA intends to foster 200 auditors by 1996 who are qualified to examine and certify environmental management systems of domestic firms.

The agency also plans to accredit at least five inspection organs by 1996 which will conduct environmental management checks and issue certificates.

## THAILAND

### **Shrimp Farming, Mangrove Destruction Reported**

94WN0357A Bangkok LAK THAI in Thai 2-8 Jul 94  
pp 26,27

[Unattributed report: "Solving the Problem of Coastal Swamp Destruction"]

[Excerpt] [Passage omitted] "The coastal [mangrove] swamps have been destroyed by the shrimp farming" is a phrase we usually hear with regard to the destruction of the coastal swamps which lie along the shore of the Gulf of Thailand. In the East, the central region and the South they stretch for about 920 km. In 1961 there were about 2.3 million rai [a rai equals about 0.4 acres] of these swamps, but the latest figures from the Forestry Department indicate that there are only 1.1 million rai of coastal swamps. This shows that 1.2 million rai have been lost.

The shrimp farmers stand accused of destroying the coastal swamps even though the nature of these swamps [benefits] shrimp farming as is well known -they are like holding areas for food which has blown from the shore or the sea as well as for leaves and parts of trees which have fallen. These decompose and disintegrate and become nutrients, a source of energy for many types of marine animals to live on.

In addition the coastal swamps protect the shore from erosion by the waves and wind when there is a monsoon from the Southwest. The coastal swamps along the shore of the Gulf of Thailand and along the shore in the South and the East are areas which hold silt, particles and poisons from the land and do not allow them to flow into the sea. So the swamps help maintain the ecological balance for the shoreline and the areas nearby so that it is suitable for raising shrimp and other coastal marine animals. In addition it is also a source of tin especially in Ranong Province, Phang-gna Province and Phuket Province.

In fact I learned from those who were involved in raising shrimp that about 400,000 rai [a rai equals about 0.4 of an acre] is used in raising shrimp, which is equal to 25 percent of the coastal swamps which have been lost.

This makes one wonder how the other 75 percent was lost.

Shrimp farming uses modern techniques which really began to be used in 1986. The technology was brought in from Taiwan and applied to shrimp farming. The farming had been done in salt farms and rice fields, but this was changed to the coastal swamps, and the production was greater than with using natural or semi-developed methods. This has become one of the five most valuable agricultural exports with regard to earning revenue for the country.

To raise shrimp correctly and achieve a good results, it is important that the environment be good and that there be no problems with pollution, industrial toxins and insecticides or with organic compounds from agriculture. In particular the soil of the coastal swamps is highly acidic, which is not suitable for raising Kuladam shrimp. It causes them to grow abnormally, such as not being able to molt and having crooked legs. This results in the shrimp farming not reaching its goal.

Therefore shrimp farming done correctly does not hurt the environment at all. It makes the ocean fertile because the water released from shrimp farming is abundant in nutrients such as nitrogen and phosphates which encourage the growth of food in the water. It causes plankton to grow, which is the first link in the food chain feeding other marine animals. This creates more professions and employment. There are 134,000 employed in raising Kuladam shrimp inasmuch as there is a great deal of industry associated with it, such as factories to breed shrimp, factories to produce shrimp food, cold storage, transportation and selling etc. In addition it produces a

good income for the shrimp farmers and brings 40 billion baht into the country.

It is still not too late, and the government already has a policy of conserving and bringing back the coastal swamps. It should place some importance on using this area to advantage by clearly dividing the area up for use by various activities such as having areas for agriculture and areas for the shrimp industry etc. so that they do not affect each other. In particular the areas for raising shrimp should be far from industrial factories and agriculture, which release chemicals, heavy metals and organic compounds into the water. In addition systematic shrimp farming should be encouraged. Individuals and farmers should cooperate in this or should use that land to advantage in the designated areas and proceed according to the regulations.

A farm built according to proper standards should have a water inlet and outlet which is separate from any waste water treatment area, and it should have various systems to protect the environment and to make the farming efficient while the government should issue regulations and have strict policies for shrimp farming.

Environmental problems, especially water pollution, have affected shrimp farming as can be seen from what happened in Taiwan, which was formerly a major shrimp exporter. Now it is not able to raise any shrimp. This also happened in Java, which includes 60 percent of the shrimp growing areas of Indonesia, but now is only able to raise half as much as it did because of deterioration in the water quality on the coast. Even the areas in Thailand in Samut Sakhon, Samut Songkhram and Samut Prakan have experienced some deterioration because of environmental problems from the promotion of industry, which generally has no waste water treatment. From this I can say that shrimp farming done correctly does not destroy the environment or coastal swamps. And I am very confident that the shrimp farmers do not want to destroy their livelihood by destroying the environment because everyone agrees that this business has created such an income for them that it has been able to raise their economic status.

There are some issues worth thinking about such as the increase in the population and using the resources of the coastal swamps for various activities. It must be admitted that the increase in the population has brought about the need to gain greater benefits from activities in the coastal swamps including [fish rafts], salt farms, making charcoal, mining, construction of various kinds such as building villages and factories, making roads, dredging channels, making harbors, activities related to harbors such as ship repair yards and loading facilities for industrial goods, and public utilities to support expanding population centers.

The loss of coastal swamps to various activities has caused environmental changes in these areas in their physical nature, their biology and their chemistry. There

have been changes in the water temperature, the amount of dissolved oxygen in the water, the saltiness of the water, sedimentation, erosion, the blocking off of the sea, and, most important, there is the presence of garbage, heavy metal particles and toxins in the water. All this affects the environmental balance of the coast such as by reducing the numbers of marine plant and animal species in the area. [passage omitted]

## VIETNAM

### Efforts To 'Regreen' Waste Land Viewed

BK2808085594 Hanoi VNA in English 0527 GMT  
28 Aug 94

[Text] Hanoi VNA August 28—Vietnam currently has 10 million hectares of waste land and barren hills, most of which was woodland which has been over-exploited and not yet regreened.

In 1992, the Vietnamese Government decided to regreen this denuded area through a series of agro-forestry-industrial projects with a total investment capital of VND [Vietnamese dong] 1,000 billion (USD 90 million). The first category of projects focuses on the planting of perennial industrial trees such as rubber, coffee and tea, and fruit-trees of high economic value such as orange, litchi and longan. The second category of projects aims chiefly protect the existing forests and regreen denuded land in combination with livestock breeding.

A recent survey of 26 agro-forestry-industrial projects being undertaken on 57,000 ha of denuded land and barren hills in 17 provinces from Quang Nam-Danang to Ha Giang showed that 28 percent of this area is suitable for the growing of industrial and fruit trees. So far 2,500 ha have been put under rubber, 7,100 ha under tea, 1,800 ha under coffee, and more than 4,500 ha under fruit-trees, providing employment for 6,000-7,000 farmer households. Each household has been granted long-term use of an average of 1.5 ha of land and an interest-free loan of VND 1.5 million.

It is estimated that within 3-4 years, growers of fruit trees would have retrieved their investment capital. Orange and mandarin give 8-12 tons of fruit per hectare or the cash equivalent of 25-35 tons of paddy. Litchi has a yield of 4-6 tons/ha, or the cash equivalent of 20-30 tons of paddy. If these fruits are dried and canned, they will have a much higher value.

The government has decided to allow the localities to change their crop structure by switching part of the cultivated land of vegetables and food grains to planting fruit-trees. It has also decided to grant bank loans to farmers to plant fruit-trees of high economic value in their orchards to supply more and more fruits for domestic consumption and export. In 1994, the state has invested VND 1.3 billion (over USD 100,000) in building 47 fruit-tree nurseries to supply saplings for about 6,000 ha of orchards a year.



## REGIONAL AFFAIRS

### Southern Cone Environmental Issues Through 12 August

PY2708010094

[Editorial Report] The following is a compilation of reports on environmental issues monitored through 12 August.

#### BOLIVIA

The Piray River, which irrigates a great part of Santa Cruz Department, is slowly dying because of pollution, the source of which has so far not been determined. Peasants from the so-called Sagrado Corazon region reported that thousands of fish of various species had been found dead and poisoned late on 26 July. They suspect that sugar mills again dumped into the river a substance known as "jaruvicho," which is derived from the sugar refining process. Peasants also reported that the pollution of the Piraicito River is affecting its tributaries in the northern part of Santa Cruz Department, as they have discovered a great number of dead fish in those rivers. (Cochabamba LOS TIEMPOS in Spanish 27 Jul 94 p A6)

#### BRAZIL

The Forum of Nongovernmental Organizations (NGO's) of Rondonia has asked the World Bank to suspend the financing of the Rondonia agricultural, livestock, and forestry plan Planafloro. In a 27-page letter sent to the World Bank president, ecologists charged the Rondonian government with violating the contractual agreement signed with the bank and with the population to be benefited by the program. The current environmental licensing system, and the authorizations granted by the state to devastate, burn, and exploit the forests, are among the violations charged by the NGO's against Rondonia Governor Oswaldo Piana. The NGO's claim that they violate the state law on socioeconomic and ecological zones and the environmental law, paving the way for the illegal removal of wood from the indigenous areas and from other areas of preservation. Luiz Rodrigues de Oliveira, the executive secretary of the NGO forum, said: "The Planafloro runs the risk of becoming a disaster such as the Polonoroeste plan," alluding to the project financed by the World Bank under the military regimes to pave the Cuiaba-Porto Velho highway. This project prompted a population invasion of Rondonia, where millions of hectares of tropical forests were devastated, indigenous areas invaded, and conflicts over land arose. (Rio de Janeiro JORNAL DO BRASIL in Portuguese 24 Jun 94 p 9)

The mercury used by gold prospectors is seriously contaminating the Caiapos Indians in the Gorotire and Djudjetikiri Reserves on the banks of the Fresco River, a tributary of the Xingu River, south of Parana State. Gold prospectors have been contaminating nature with mercury for over two decades. The charges were leveled by the Mata Virgem Foundation at Attorney General

Aristides Junqueira. The Indians, the National Indian Foundation, and even local mayors have authorized over 10,000 gold prospectors to work in the Fresno River, but they do not concern themselves over the need to reduce the amount of mercury spilled into the river. The Indians drink contaminated water, breathe the steam saturated with mercury, and eat polluted fish. Samples of blood, urine, and hair from 130 gold prospectors indicate that 81.3 percent of them are contaminated. (Rio de Janeiro JORNAL DO BRASIL in Portuguese 23 July 94 p 3)

The Environmental Secretariat of Parana State has discovered the largest area of illegal deforestation in the state in the last 20 years. The ecological crime was perpetrated with the help of members of the Environmental Secretariat office in Ibaipora, in the northern region of the state. The head of the office himself prepared illegal orders allowing the felling of trees. Some of the documents found authorized sawmills to fell trees in 120 hectares of native-species forest. Officials believe that in but one small portion of the deforested area wood worth some 1 million reais has been cut and taken away. Some 15 officials at the Ibaipora regional office of the Environmental Secretariat have already been dismissed from their positions, and the owners of the sawmills and the land will be sued in accordance with the law. (Rio de Janeiro Rede Globo Television in Portuguese 1600 GMT 12 Aug 94)

#### CHILE

On 1 August the Carabineros dedicated the Subprecinct for Ecological Affairs, which will be in charge of contributing to the decontamination of Santiago. It will cooperate with police organizations such as the OS-5 Carabineros Forestry Department. Personnel from the new unit will continuously patrol the city, and will enforce municipal regulations on the handling of waste, cleanup, and street ornamentation. (Santiago EL MERCURIO in Spanish 1 Aug 94 p C10)

The Santiago Environmental Health Service on 2 August ordered the closure of a mining company that had imported 20,000 kg of selenium from Canada, and decided to reexport the shipment to the country of origin after proving that it is a toxic product harmful to human health. Health authorities reported that a number of measures will be adopted to prevent the entry of toxic waste in Chile, including the control of the border posts with Argentina and of the ports of Valparaiso and San Antonio. In February 1993 a shipment of 470 metric tons of antimony waste entered Chile through the port of Arica enroute to Bolivia without the knowledge of authorities. (Madrid EFE in Spanish 0217 GMT 3 Aug 94)

The Political Ecology Institute (IEP) on 3 August asked the Interior Ministry to forbid the entry into the Chilean port of San Antonio of a ship loaded with toxic waste coming from the Peruvian port of El Callao. Ecologists released a letter saying that the ship "Triglav" flying the Croatian-Slovenian flag was carrying eight containers

loaded with heavy metals, expired medicines, and other substances dangerous to human health. The IEP warned that the ship planned to dock in the Chilean port of San Antonio. The shipment was unloaded in Cartagena de Indias, Colombia, in March, but the government ordered the ship to leave the country following charges by ecologist groups. The ship was not able to dock either in Ecuador or Peru, but ecologists said that the company apparently will try to unload the waste in El Callao. The IEP has also requested the Navy to control the passage of the ship and prevent it from entering the 200-mile territorial waters. (Madrid EFE in Spanish 2245 GMT 4 Aug 94)

#### PARAGUAY

Nature conservationists are asserting that lenient laws have been allowing the perpetration of serious ecological crimes, such as the destruction of a large number of hectares of forest and wild animal poaching. Those involved in enforcing constitutional provisions on the conservation of nature have sent an SOS to Congress. Hectares of forests are being destroyed in the twinkling of an eye, and wild animals included on a list of unauthorized game are captured or massacred every day—including the tagua, a survivor from prehistoric days that is now an endangered species. In Paraguay the courts can merely retard the destruction of hundreds of hectares of forests, while the typical fine totals but 4 million guaranies. At this rate our nature will disappear forever along with millions of possible genetic resources. Members of the Attorney General's Office have asked Congress to replace current laws with new ones that would actually severely punish criminals who damage the environment. Joint action by legislators, the courts, and the people, through their activities and reports, would prevent our valuable natural resources from suffering irreparable damage. (Asuncion Cerro Cora Sistema Nacional de Television Network in Spanish 1600 GMT 10 Aug 94)

#### PERU

Foreign Minister Efraim Goldenberg on 4 August said that Peru would not allow the Croatian ship "Triglav," carrying toxic waste, to dock in Peruvian ports. He told the press: "We will not become a dump for toxic waste."

He noted that the Peruvian Navy has ordered all its units not to allow the ship to dock. (Madrid EFE in Spanish 0139 GMT 5 Aug 94)

#### PARAGUAY

##### Brazil Offers To Share Meteorological SCD-1 Satellite

PY2508233294 Asuncion ABC COLOR in Spanish  
20 Aug 94 p 76

[Text] During a news conference at the Defense Ministry National Directorate of Civil Aeronautics (DINAC) yesterday, Dr. Helio Barros, the Brazilian Science and Technology Ministry planning director, announced that Brazil has placed at the disposal of Paraguay a cooperation program to share the use of the Brazilian satellite SCD-1 [Data Collection Satellite-1]. This satellite is specially designed collect and transmit meteorological, hydrological, and environmental data.

The Brazilian official said the Brazilian Government is very interested in establishing a meteorological information system with regional countries, using for this purpose accurate data supplied by the SCD-1 satellite, which is already in orbit.

Dr. Barros noted: "We virtually relied on data collected by U.S. satellites. Now we have our own satellite and we believe it is appropriate to process our own data."

Dr. Barros and Dr. Antonio Divino Moura from the Brazilian National Institute of Space Research (INPE) and engineer Sergio Paula Pereira, an expert on the use of the SCD-1 satellite and other environmental satellites, came to our country to explain the scope of the cooperation offered.

Brazil has offered Paraguay the use of the satellite system for collecting and transmitting meteorological, hydrological, and environmental data; numerical meteorological forecasts drawn up the INPE Weather and Weather Forecasting Center in Sao Jose dos Campos; effects on South America's weather changeability; and personnel training (technicians, masters, doctors, experts, etc.).

Benjamin Grassi, the DINAC Meteorology and Hydrology director, noted that the Brazilian offer is very important for our country because these reports could be used to take precautionary action in advance against river floods and other disasters.

## INDIA

### Nations Attend Biodiversity Meeting, Declaration Adopted

BK2908020794 Delhi THE HINDUSTAN TIMES  
in English 26 Aug 94 p 7

[Text] Bangalore, Aug 25—The international consultation on biological diversity which concluded its two-day meet here has declared its resolve to form an "Asian Regional Fund" that would act in unison on issues relating to the use of genetic resources.

The consultation was attended by 11 countries including Afghanistan Bangladesh, Bhutan, Japan Malaysia, Maldives, Myanmar, Philippines, Thailand and Vietnam besides international organisations and the United Nations Environment Programme.

Adopting the 'Bangalore Declaration' on biodiversity, the countries decided to develop regional and national inventories of the components of biological diversity based on survey and identification.

The declaration affirmed the countries' resolve to establish regional linkages of scientific and technological capabilities, and the optimal utilisation of existing institutional infrastructure and networks.

The countries adopted the declaration with the intention to frame common guidelines regarding access to genetic material to interested parties including provisions for a material transfer agreement, sharing of full information as well as mechanism to provide access to technologies and products developed from the transferred genetic material.

Official sources said the linking together of the Asian countries was imperative as this would ensure that the biodiversity convention was successful in the face of challenges from the developed world.

Meanwhile, briefing the Press, Environment Secretary Rajamani said the Indian legislation on protection of indigenous bio-material was almost ready, and a Bill would be introduced in Parliament's next session.

The draft legislation had run into rough weather as it had to encompass complex issues of farmers' rights, technology transfer and intellectual property rights. At least nine expert groups were working on these issues and a status report on these was being prepared by the Indian Institute of Public Administration.

One of the reasons for the slow progress of the legislation was because extreme caution had to be exercised in framing it and when the Bill was ready it should not "backfire", the Secretary said. An information network would be set up on the existing situation regarding the country's genetic resources.

### Kerala River Pollution Threatens Lives

94WN0390 Bombay THE SUNDAY STATESMAN  
in English 24 Jul 94 p 11

[Text] Nilambur (Kerala), July 23—Indiscriminate use of mercury in gold extraction and in rayon manufacture

has polluted the Chaliyar river, endangering the life of lakhs of people in north Kerala, reports PTI.

Unauthorized gold mining from Maruththamala and Mannucheeni Malavaram under the Nilambur North Forest range of Kerala's Malappuram district, uses mercury indiscriminately and unsystematically to separate gold particles while large quantities of mercuric salts are used as fungicide to arrest fungus growth on the pulp by Gwalior Rayons at Mavoor (Kozhikode), environmentalists say.

With the mercuric pollution of the river, a large number of people from the Malappuram and Kozhikode districts have been exposed to serious health hazards since they get drinking water from it, they say.

A study on Chaliyar pollution by the scientists of the Centre for Earth Science Studies, Trivandrum in 1988, found that the mercury content in the river had reached alarming levels.

While the quicksilver content at a distance of about one km from the estuary was 1.15 PPM (parts per million) it was 2 PPM at seven kms from the estuary, water samples taken at 31 points along the river over a distance of 23 km showed.

The mercury content of the river at distances of 21.55 km and 22.65 km was at 0.05 PPM as against the prescribed limit of 0.001 PPM.

Though Gwalior Rayons did not use mercuric salts in their manufacturing process, they did not disclose the names of the chemicals used to arrest the growth of fungus to the study team. The study showed:

- The Rayons had used large quantity of caustic soda in the process to dissolve the pulp and the mercury must have emanated from it, the study revealed, as disclosed by the company officials.
- It had also revealed that not more than the prescribed limit of mercury content was present in the water samples tested from Koolimadu which is upstream of Gwalior Rayons.

In its most advanced form, mercury poisoning turns into Minamata disease that causes brain damage, birth defects and death. The illness got its name from a pollution scandal that began in the 1950s when the dumping of industrial mercury compounds in Japan's Minamata Bay caused widespread illness among locals.

According to reports, about 2,000 tons of mercury would have been dumped into the Amazon over the past 15 years.

### National Environment Panel To Be Established

94WN0397A Bombay THE TIMES OF INDIA  
in English 9 Aug 94 p 12

[Article by Askari H. Zaidi: "Government To Set Up Environment Tribunal"]

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[Text] New Delhi, August 8—Contrary to the suggestions given by the parliamentary standing committee on science, technology, environment and forests and environment activists, the government has decided to go ahead with the setting up of a "national environment tribunal" (NET) to deal with cases relating only to accidents occurring due to mishandling of hazardous substances.

After a thorough discussion on The National Environment Tribunal Bill, 1992, the standing committee had observed that though the title of the bill conveys an impression that it is "very comprehensive" and covers within its ambit all cases of liability and compensation arising due to environmental damage or pollution, whatever be its cause, its scope is actually restricted to cases concerning the protection of environment and payment of compensation to persons, property and the environment while handling the hazardous substances.

"The committee strongly feels that the government may seriously think of enlarging the scope of the bill by including under its ambit, cases of compensation for damages which are caused even by such substances as have not been identified as hazardous by the ministry of environment and forests..." the committee had suggested. The government has, however, decided to bring before parliament in the current sessions the Bill which has ignored this specific suggestion.

According to a senior official of the ministry of environment, soon after getting parliamentary approval for the bill, the government will set up the NET with benches in four metropolitan cities to begin with.

The tribunal's benches will be extended to all state capitals in the second phase, he added.

The government move to set the NET stemmed from the call given at the Rio Earth Summit that states should develop national laws regarding liability and compensation for the victims of pollution and other environmental damages.

Environment activists have, however, criticised the government move primarily on the grounds that the bill's scope is narrow, the tribunal's jurisdiction may cause confusion among the public, and it does not specify norms to determine liability, compensation, and rehabilitation.

"The bill has completely overlooked environmental damage done, say, due to mega projects like the Sardar Sarovar Project," says Ms Kerban Ankalesaria, an environmentalist from Bombay.

Moreover, the bill has specifically excluded from its purview that damage done to environment, property, or loss of life due to an accident by reason of war or radio-activity. "Is it because the radio-active elements are mainly handled by government institutions or agencies," asks Ms Ankalesaria.

In fact, it was only after the insistence of the standing committee that the government agreed to amend the original bill, taking away the power of the central government or exempt any undertaking or corporation owned or controlled by a state or the central government from the liability of damages in case of a mishap on their premises.

The committee also added a new sub-clause (2) after sub-clause (1) in clause 5 with a view to empower the tribunal to take up claim cases for compensation *suo motu*.

Environmentalists have also pointed out that the setting up of the tribunal is bound to create confusion among the public as it will deal with cases arising out of accidents due to mishandling of hazardous substance while all other cases of environment damage will continue to be heard by district or high courts.

## ISRAEL

### Agriculture Ministry To Help Palestinians Fight Pollution

TA0209113794 Jerusalem THE JERUSALEM POST in English 2 Sep 94 p A3

[Report by Liat Collins]

[Text] The Agriculture Ministry will help the Palestinian Authority check for the source of pollution in agricultural produce.

At a meeting yesterday between Agriculture Minister Ya'akov Tsur and Muhammad El-Rais, director general of the PA's agriculture department, the two agreed to cooperate on a number of measures to prevent contaminated produce from reaching Israel and to locate the source of the problem.

The meeting was urgently convened following the Health Ministry's warning that a large number of bacteria had been found in vegetables from Gaza.

The chief veterinarians and members of Israeli and Palestinian wildlife protection bodies also took part in the meeting.

El-Rais denied Israeli allegations that Gazan farmers water their fields with sewage. If there are above acceptable levels of bacteria in produce, the source is in groundwater and wells which have been polluted by the sewage from Gaza City and the nearby refugee camps, he said.

He also said that tests show abnormal quantities of bacteria in lettuce and celery, but these vegetables are not being marketed outside Gaza at present, adding that apparently these contaminated vegetables came from Israeli farmers. Israeli farmers have denied that it is their produce that carries the pollutants.

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El-Rais described the issue as "a very serious one" as the same water source is used for irrigating fields and drinking water.

Experts from both sides are expected to jointly collect water samples and examine the irrigation system in the Gaza Strip in the coming days.

If polluted water is found, the experts will help the Palestinian Authority agricultural workers establish a filter system.

Tsur and El-Rais have met several times in the past but this was the first time the heads of the Palestinian Agriculture Department visited the minister's office in Tel Aviv.

## TUNISIA

### Efforts To Eradicate Environmental Pollution

#### Environmental Minister Discusses Programs

94WN0375A Tunis *REALITES* in French 30 Jun 94  
pp 8-9

[Interview with Mehdi Mlika, minister of environmental affairs and land planning, by Ridha Lahmar; date and place not given: "Citizens Entitled to Healthy Environment and Sustainable Development"]

[Text] On the occasion of National Environmental Protection Day, and mindful of all our country's pollution problems, we asked Mr. Mehdi Mlika to discuss the broad lines of his environmental protection policy, with its implications for land planning and the imperatives of sustainable development.

**Lahmar:** Mr. Minister, can you tell our readers where we stand in the fight against pollution, and where are our worst problems?

**Mlika:** The services under this ministry began by performing a veritable scientific and technical "diagnostic" of pollution in our country. Our approach has been pragmatic: We've examined the state of the sea, the land, and the atmosphere. We've investigated environmental conditions on agricultural land and in forests, the pollution in industrial and urban regions, analyzed water quality, and studied the public health environment. We've taken a particularly close look at conditions in low-income neighborhoods on the outskirts of our cities, with a view to rehabilitating them. Our worst pollution problems are highly concentrated geographically around our industrial hubs: Sfax, Gabes, Bizerte, Kasserine, and Ben Arous. Finally, we've prepared a comprehensive and coherent strategy for environmental protection. Our national action plan, "Agenda 21 National," will enable our country to enter the 21st century with the environment preserved, ready for sustainable development.

**Lahmar:** Can you tell us what principles underlie your approach?

**Mlika:** Our actions derive basically from our concept of human rights. We started from the principle that Tunisians have the right to a healthy environment, to health and well being, plus the right to sustainable development, thanks to protection of natural resources and the environment from degradation. Actually, the two are closely related, since preservation of our natural resources should allow our children to benefit from sustainable development.

**Lahmar:** What are the top priorities in your action plan?

**Mlika:** Starting from the diagnostic and the action plan, the services under the ministry, ANPE [National Environmental Protection Agency], and ONAS [National Public Sanitation Office] have targeted action priorities on the basis of their environmental impact: urban sanitation, solid waste management, and disposal of industrial and hospital waste.

We have tried to match our words with action: For example, over the last two years we've improved sanitation in 80 out of the 300 low-income neighborhoods surveyed, at a cost of 13 million Tunisian dinars [D], by installing a network for collection, removal, and treatment of waste water. The second stage of the 10-year plan has now been launched; it involves 130 neighborhoods over the life of the Eighth Plan, and will cost D25 million.

President Ben Ali has made courageous decisions, such as closing the NPK factory, to protect the health of citizens from toxic emissions. Industrial activities have been moved to La Skhira to protect jobs. It's the same with the Nefza tannery, which was polluting the water table with toxic waste water. Another plant in Mahdia that was processing olive cake and polluting was shut down to protect the environment. Also, rehabilitation measures have been adopted to prevent environmental pollution. In Kasserine, for example, the pulp factory that was emitting mercury was forced to modify its practices, at the cost of a D20-million investment. In Gabes, a two-stage absorption process (better profitability) ended emissions of toxic gases into the atmosphere, at a cost of D80 million.

**Lahmar:** Don't you think, Mr. Minister, that these investments are a luxury in a country such as ours, where the leading concerns are to create jobs and promote production and exports?

**Mlika:** Not at all. Studies we have made of the impact on public health have shown that the nation spends four times as much on health infrastructure, medical care, and medications. In reality, pollution generated by atmospheric, toxic, and industrial waste affects the health of the citizen, causing maladies and suffering and productivity losses from illness. This is why we talk so much about the utility and importance of [environmental] impact studies; industrial polluters must be located outside urban areas, far from the coast, and they must treat their wastes.

**Lahmar:** Can you tell us, Mr. Minister, how much relative emphasis you put on prevention versus remedial action?

**Mlika:** Preventive measures are included in the national planning scheme, which makes impact studies mandatory at two levels: For example, for the building of a tannery, we study both the impact on of the tannery on the environment and the impact of the industrial zone on the entire region, to avoid pollution, for there are sensitive zones such as coastal areas and beaches, major cities, that must be protected at all costs. We are working to reconcile the national master plans for transport, energy, and water with the imperatives of pollution prevention. For that, we depend on very modern techniques such as aerial photography and remote sensing. ANPE and the Directorate General of Land Planning play the key role in preventing public nuisances, while ONAS works on rehabilitation.

We can say that important actions have gotten under way to reduce pollution at the worst sites: At Gabes, we have invested 80 million of the D150 million needed to reduce the harm from phosphoric acid, though the problem of phospho-gypsum remains to be resolved. At Sfax, over a three-year period, we've invested 35 million of the 70 million needed. In Ben Arous, 40 percent of the industrial nuisances have been resolved. In Gafsa, at the phosphate complex, the water pollution has been stopped. The air pollution problem remains to be resolved. In Bizerte, the problems of STIR [Tunisian Refining Company] and El Fouladh are still with us, for lack of funds. You must remember, this is a 10-year plan and we are only in the third year. We hope to complete it before the 10 years is up. In the coastal areas, we have set up five permanent laboratories that are now operational to analyze water quality where people swim and the sand on the beaches; three others are under construction, while four Japanese-built laboratories on wheels patrol the beaches to ensure against contamination. We can say that our beaches are healthy; that is important, both for our own countrymen and for tourists.

**Lahmar:** And what measures are being taken to stop pollution by the PME's [small and medium-sized industries]?

**Mlika:** With regard to PME polluters, we have taken three series of measures to "rehabilitate" offenders in this domain. First, sensitization through cost-free studies; second, advocacy of technical assistance solutions, again on a cost-free basis; finally, incentives for installation of waste treatment equipment with aid from the pollution control fund. This aid subsidizes 20 percent of the investment, and provides assistance in finding bank financing for 50 percent, leaving 30 percent for the enterprise itself to contribute. All this is in compliance with the two basic principles adopted by the legislature: The polluter must be the payer, and the producer must take responsibility for reclamation. The Integrated Investment Code has provided tax incentives for enterprises that preserve the environment. We have

prepared studies, at no charge, for building a purification station for 15 industrial units that will cost Ben Arous some D6 million, to be financed by the parties in question. We have found new waste pretreatment solutions for individual enterprises, and ONAS will then connect the factories to the public [sewage disposal] network.

**Lahmar:** Mr. Minister, have we found the necessary sources of financing? What about possibilities of recycling the debt?

**Mlika:** Four years ago President Ben Ali launched the idea, which has been getting more and more support, of recycling debt reimbursement payments into environmental protection projects, starting from the idea that the phenomenon is worldwide in scope. Some foreign partners have accepted the principle. For example, with Sweden we have three large projects, including the Kalaat El Andalous sewage purification station, which was totally built by Tunisia, the three national parks of Nahli (Ariana, D350,000), Bou Kornine (D500,000), and Sidi Yahia at Sousse, which is an urban green zone, and finally solid waste triage centers at three towns in the Sahel.

In partnership with the Netherlands, over the last two years, we have completed two suburban sanitation projects. In cooperation with Germany, with the help of grant money, we are implementing several antidesertification projects.

**Lahmar:** Can you talk to us a little about Agenda 21 and redevelopment projects?

**Mlika:** Agenda 21 National is an integrated set of programs and actions that includes seven distinct programs. First we have the "three hands," blue, green, and yellow. The "blue hand" refers to protection of the seas, beaches, and coasts against pollution. The "green hand" covers expansion of green zones, reforestation, and wilderness parks. The "yellow hand" symbolizes the struggle against desertification in all its forms. PRON-AGDES [expansion not given] deals with management of solid waste: collection, handling, regulation of dumping, composting, etc. In addition, we have industrial pollution abatement and environmental monitoring as well as the sensitization and education program. ONAS has done a great deal to improve urban waste water treatment: The big cities now all have public sewage systems to capture waste water. Thirty mid-size cities have been equipped, with the help of an IBRD [International Bank for Reconstruction and Development] loan. For small towns, the process has begun: Nationally, 75 percent of residences are connected to sewage systems, a percentage considered very high for a developing country. Our country currently has 42 purification stations, 5,500 km of culvert, and 230 pumping stations, thanks to the energetic and able work of our cadres. For the Eighth Plan, D600 million of direct investment has been earmarked. If you count indirect investments paid for by other departments, the figure



would amount to 1,400 million. This gives some idea of the high priority we place on the environment.

**Lahmar:** Can you tell us where technology transfer comes into the picture, and how much is earmarked for training of cadres?

**Mlika:** Drawing on foreign techniques, Tunisian technicians are now building purification stations whose physical plant is 65 percent Tunisian, and which thus cost 50 percent less than if imported, thanks to the know-how of Tunisian enterprises. We have joint research projects under way with ENIT and ENIS [expansions not given] to find pollution abatement solutions. Our training center for advanced station maintenance is training 35 people per year to the associate degree [two years post-secondary] level. In short, the sector is becoming more and more integrated. We have in the planning stage a national center for environmental technology, in collaboration with friendly countries, to develop specific techniques adapted to our needs: the struggle against desertification, abatement of industrial pollution, etc. The center could be international in terms of its mission and its influence.

**Lahmar:** It would seem that a great deal of hope rests on sensitization and education of young people about environmental protection. How, and why?

**Mlika:** We have an ambitious national program in this domain, to popularize the principles of environmental education, because education of adolescents and children is expected to change the attitudes of adults and engender the kind of civically responsible behavior that augurs well for the future. We have a project to form "environmental clubs" in the schools with their active participation. "Labib," the mascot, is the "hero" of this project.

#### **Industrial Pollution Sources Identified**

94WN0375B Tunis REALITES in French 30 Jun 94  
pp 10-11

[Article by Ridha Lahmar: "Environmental Pollution and Degradation: Zones at Risk"]

[Text] Over the last 30 years, the expansion of human activities—extensive livestock raising, intensified agriculture, construction of irrigation systems, as well as the process of industrialization and urbanization—has by its scope and rapidity led to degradation of the natural environment, and in some zones to deterioration in the quality of life.

The manifestations of this phenomena are many: desertification of some regions in central and southern Tunisia, toxic waste released into the environment by chemical plants located in the beds of wadis [normally dry river channels], declining numbers of fish in the Gulf of Gabes because of phosphoric acid, waste water produced by the inhabitants of lower-income neighborhoods, dumping of domestic waste on the outskirts of big

cities, underground water sources polluted by overexploitation of irrigation wells, etc.

#### **High-Risk Zones**

Then too there is flooding, and degradation of the littoral as a result of waste from boats that damages our beaches and coasts. What we propose to present is a survey of the status of areas subject to various kinds of pollution problems, a sort of map of Tunisia's high-risk zones, both to illustrate the extent of the phenomenon and to examine measures and plans aimed at remedying the situation through concrete action. At the same time, the state has adopted a comprehensive prevention policy to prevent similar problems from arising in the future. Among other things, the policy calls for sensitization of adolescents and schoolchildren, civic education, and citizen participation.

#### **Water and Soil**

The growth of large-scale sheep raising in central and southern Tunisia has led in many cases to overexploitation of ground cover and pasturage, resulting in impoverishment of the soil and movement of topsoil by the action of wind and running water (erosion). The most spectacular consequence has been increasing desertification and the advance of dunes that threaten oases, crops, and villages: 3 million hectares are threatened, and 18,000 hectares are lost each year. Also, the growth of irrigated farming—fruit plantations and vegetable crops—has encouraged overexploitation of underground water sources: Between 1960 and 1990, the volume of exploitable water resources doubled, from 667 to 1,170 million cubic meters [m<sup>3</sup>].

Some 85 percent of this water is provided by 100,000 wells, half of them equipped with motor-driven pumps. The consequence of all this uncontrolled drilling is that the water for Chott El Djerid—the Nefzaoua water table—is at risk of being poisoned by salinity.

This phenomenon has become a reality in some parts of Cape Bon, where overexploitation of ground water has made the water unusable, owing to the danger it poses for fruit trees. The citrus trees of Cape Bon were only saved thanks to extra water provided by the Medjerda/Cape Bon Canal. Now the quality of water and soils is an irreplaceable natural boon for agriculture and livestock raising, not to mention for feeding people in the countryside, meeting domestic needs, etc. The use of chemical fertilizers and pesticides in agriculture puts the future of our ground water at risk of pollution.

Large underground water reserves remain in the region of Kairouan and Sfax, Gabes and Medenine, Tozeur and the extreme south; there are somewhat smaller reserves in the zones of Kebili and Tataouine, the Kef, Sidi Bouzid, Kasserine, Gafsa, Jendouba, Ariana, and Cape Bon. Elsewhere (Beja, Siliana, etc.) underground water is very limited.

#### **Coastal Threat**

The Mediterranean is an almost-inland sea with a great deal of boat traffic. Undersea currents and the direction

of prevailing winds expose our coasts to marine pollution from hydrocarbons and ships dumping ballast on the high seas. Moreover, not all our ports have purification stations. Degradation of the marine environment is obvious at Sfax and Gabes: The natural wealth of the sea is being impaired, as is evident from the decline in fish production. Underwater plant life is deteriorating in a [fish] reproduction zone, while fishermen in coastal waters are overexploiting stocks, as is evidenced by the proliferation of fishing boats and trawlers at Sousse, Mahdia, Sfax, and Gabes.

The chemical industries situated near the coast, with the toxicity of their untreated wastes, contribute a great deal to pollution of the marine environment.

### Flooding Threat

An unusual natural phenomenon, flooding triggers unpredictable calamities for the population and for infrastructure. Their periodicity cannot be established with precision, since it is affected by irregular autumn and spring rains and by the network of wadis, whose valleys are poorly trenched. The most vulnerable regions are Jendouba, Bou Salem, Mateur, Sidi Bouzid, Sfax, the Skhira and Kairouan, and the southern outskirts of Tunis.

The floods of September 1969, March 1973 and 1979, and October 1992 will long be remembered. Discharges from the wadis rose to 1,000 times normal—even 2,000 times normal for several hours—which led to flooding impossible to control without dams or ground cover. Construction of several dams such as those at Sidi Saad on the Zeroud wadi, Houreb on the Marguelli wadi, and Sidi Salem on the Medjerda has helped attenuate the effects of these inundations. But much flood engineering remains to be done: correction of wadi beds, improvement of catchment basins, construction of protective dikes, etc.

### Urban Risks

It is in the urban and industrial zones—and by reason of their relatively small size, the concentration of housing and population, the proliferation of factories—that we find pollution at its most spectacular, and at its most distressing, from a quality-of-life standpoint. First, there are problems of collecting and storing solid waste, removing residential waste water, and dealing with more or less toxic industrial waste, not to mention rainwater. These pose the most serious sanitation and public health problems.

The biggest industries are also the heaviest polluters: The cement plants (Bizerte, Tunis, Gabes, etc.) and metalworks (Menzel Bourguiba) pollute the atmosphere with their dust: The El Fouladh steel plant discharges nine

tons per day of iron oxide-base dust and carbon monoxide, not to mention the noise pollution and propagation of vibrations at the cementworks. As for the chemical industries (tanneries, for example) and agrofood factories, they pollute the water: Discharges from the 20 tanneries dump 2,500 m<sup>3</sup> per day of waste water "rich" in chrome and cyanide, among other things.

The problem consists first of all in getting waste treatment equipment for the industrial facilities, then connecting them to a public drainage system, so waste is not returned untreated to the environment. An example: In the governorate of Ben Arous, which has 615 industrial units, only 13 percent of them have been connected to a public drainage system, while 30 units ought to have pretreatment equipment; 40,000 m<sup>3</sup> per day is discharged into Tunis's South Lake by a network of canals.

Bizerte lake, too, finds itself a natural receptacle for waste from the big industrial plants: the Bizerte refinery, STIR, El Fouladh, and the Cementworks. And Bizerte doesn't even have a purification station yet!

At Kasserine, the Sotupalfa pulp factory dumps four tons per year of mercury, by-product of the caustic chlorine, and there is a high risk of contamination of ground water. The waste water contains 375 times as much mercury as allowable under European standards.

At Sfax, where pollution reached such record levels that the Siap-B plant had to be closed down, many steps are being taken to abate pollution from the industrial zones and the port, including waste treatment stations and connection to public drainage systems. Project Taparura, now under way, is an effort to stop much of this pollution, but it is very costly.

In large and even medium-sized cities, the two biggest problems are construction of public waste water drainage systems with accompanying purification stations, on the one hand, and solid waste management—controlled collection and disposal—on the other. Treatment of hospital waste is a special case, which must be considered separately.

To estimate accurately the dimensions of the residential waste problem, you must realize that the average Tunisian "generates" 150 kg per year, or 1.2 million tons, of which 70 percent is organic and 11 percent consists of cardboard and paper. Industrial wastes total 217,000 tons per year, and the volume of special wastes is divided as follows: 2,000 tons per year from hospitals and clinics, 300,000 batteries and dry cells, 75,000 tons from slaughterhouses and hen-houses. A gigantic task. To improve urban sanitation, we have had two major projects—for greater Tunis and greater Sfax—that involved laying 300 km of culvert and building four purification stations. Plus a 17-town project with 240 km of culvert and 26 pumping stations with two purification stations. Finally, a 15-town project to rehabilitate existing drainage systems. And much remains to be done.

## RUSSIA

### Majak Nuclear Incident Said Not Uncommon

BR0709075294 Oslo AFTENPOSTEN in Norwegian  
2 Sep 94 p 6

[Ole Mathismoen report: "Fire in Russian Atomic Plant in the Urals"]

[Text] According to official sources, the fire was extinguished quickly and caused no radioactive emissions. Administrators of the nuclear complex in Majak considered the fire so insignificant, that they did not even set up an investigating committee, reports Bellona's Russian office in Murmansk.

"Our experts evaluated emissions as zero on the international scale of radioactive emissions," said spokesman Georgij Kaurov of the Atomic Energy Ministry yesterday. Emissions were calculated as only 4.35 percent of the highest acceptable value.

#### More Serious?

The Russian news agency INTERFAX yesterday quoted several anonymous sources in Moscow and Majak as saying that the fire was more serious than that. One of the assertions is that radioactive materials were ignited, which resulted in cables catching fire and causing a short circuit. The source claims that there were emissions corresponding to 3 on a scale of 0 to 7. In international terms, 3 means a "serious incident."

Nuclear physicist Boehmer in Bellona says that regardless of whether the fire is classified as zero or three, it will scarcely have caused radioactive contamination outside the installation:

"Such accidents and fires happen all the time due to bad maintenance and low morale among plant personnel. Sooner or later we will have a bigger accident in one of the installations on the Kola peninsula, in the Urals or in Siberia," says Boehmer.

#### In the Spotlight

The formerly secret and closed atomic city Chelyabinsk-65 is one of the really large nuclear centers in Russia. Bellona has pointed the spotlight at the critical situation in the large radioactive water reservoirs in Majak. Leaks from them can flow into the river Ob and from there into the Kara and Bering Seas.

Maximum risk is involved in the reprocessing installation where plutonium and uranium are removed from spent nuclear fuel. There are no acceptable storage facilities for waste from reprocessing. After being closed for some time, Majak came back into operation early this year.

### Totsk Military Site Termed Source of Ecological Danger

LD3108230794 Moscow INTERFAX in English  
1742 GMT 31 Aug 94

[Text] The Totsk military complex located 200 kilometers from Orenburg (the administrative center of the

largest region in the South Urals) is a source of ecological danger because of earlier tests of nuclear and chemical weapons, the administration of the Orenburg Region told Interfax with reference to Defense Ministry archives. Fragments of radioactive materials may still be present on the testing ground.

In 1954, troop exercises with the use of nuclear weapons were held on the Totsk testing ground under Marshal Zhukov's command. During the exercises, a 20 kiloton bomb was exploded on the ground, which is comparable with the nuclear explosions in Japan in 1945. The air explosion occurred at an altitude of 300 meters—twice as high as the explosions in Hiroshima and Nagasaki.

The local sanitary services report that from 1950 to 1990 the incidence of oncological diseases in the region increased 2.5-4 times and the death rate caused by malignant tumors increased 5 times from 1976 to 1990. The number of children with congenital disorders increased five times from 1960 to 1992.

In addition to this, Soviet-German air and ground tests of chemical weapons were held on this testing ground from 1926 to 1933. Local environmental protection organizations report that the ground and water in this region still contain large amounts of chemicals and components of weapons of mass destruction.

### Pacific Fleet Barred From Dumping Nuclear Waste in Far Eastern Seas

LD3008161594 Moscow INTERFAX in English  
1349 GMT 30 Aug 94

[Text] Russia's Ministry for the Environment and Natural Resources cannot give the Pacific Fleet authorization for dumping 2000 cubic meters of liquid radioactive waste into the Far Eastern [FE] seas.

Head of this ministry's department for environmental safety, Viktor Kutsenko, told Interfax that the Russian Navy asked for assistance in solving this problem on many occasions and that Prime Minister Viktor Chernomyrdin banned the dumping of radioactive waste at the end of last year.

He also said that only the government could give a go-ahead to such an operation. The solution of the problem will depend on the recommendations to be given by the governmental commission for nuclear safety, headed by Chairman of the State Atomic Inspection Committee Yuriy Vishnevskiy.

Earlier, a representative of the State Atomic Inspection Committee told Interfax that this agency was against dumping liquid radioactive waste given the likelihood of protests coming from Japan and South Korea.

Kutsenko believes that this problem has a political side. The aggregate radioactivity of the liquid radioactive waste dumped in October 1993 stood at 0.38 curie, while the 16 Japanese nuclear power plants annually dump liquid radioactive waste with a radioactivity of 6,000 curie.

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He said that talks on the problem are underway with Japan. He also said that the Japanese evaporation know-how could not be used in Russia because requires a high level of energy consumption which the Maritime Territory cannot afford.

### **Lack of Funds Holding up Radioactive Waste Recycling**

*LD2908163694 Moscow ITAR-TASS in English  
1451 GMT 29 Aug 94*

[By ITAR-TASS correspondent Veronika Romanenkova]

[Text] Moscow August 29 TASS—The Russian Government has developed detailed plans for the storage and recycle of radioactive wastes, but does not have enough money to implement it.

The programme includes the construction of special recycling factories and storage sites in the northern and far eastern areas of Russia, ITAR-TASS was told today by Nikolay Yegorov, the Russian deputy minister for atomic energy.

Those construction plans are part of the "list of top-priority tasks in the treatment of radioactive wastes," a document which reflects the first part of the government programme. However, it is impossible to implement them completely now, since funds are short, Yegorov said.

The atomic deputy minister noted that even putting the most vital measures into effect is problematic. The Atomic Ministry needs 115 billion roubles for the programme, but has been promised only 45 billion, of which not one rouble has yet to be actually assigned. "The most important jobs have practically been cancelled," Yegorov said.

### **Official 'Categorically' Opposes Radioactive Waste Dumping**

*LD2708142594 Moscow INTERFAX in English  
1316 GMT 27 Aug 94*

[Text] The Pacific Fleet command has asked the Russian government to let it dump 2 thousand cubic meters of liquid radioactive waste into Far Eastern seas. Interfax learned this from the chief of the department for monitoring the nuclear and radiation safety of defence-purpose nuclear reactors of the National Nuclear Safety Committee, Nikolay Bisovko.

As he said, his committee categorically objects to the dumping of liquid radioactive waste. Such an action may have negative political consequences for Russia.

Last October the dumping of liquid radioactive waste by Pacific Fleet vessels gave rise to sharp protests from Japan and South Korea. According to Bisovko, the Russian government planned to spend 45 billion rubles this year to resolve the problem of radioactive waste.

Some of these funds are to be spent on building installations for utilizing liquid radioactive waste in Russia's Far East.

Russia's Atomic Energy Ministry will act as the agency ordering the construction of such installations, Bisovko said. Sixty percent of the first installation for utilizing radioactive waste has already been built by a plant belonging to the ministry, he added.

According to Bisovko, his committee intends to suggest that the problem of radioactive waste should be considered by the governmental commission for pressing issues led by First Deputy Premier Oleg Soskovets. It's necessary to start financing the construction of installations for utilizing liquid radioactive waste in the Pacific Maritime Territory as soon as possible, Bisovko pointed out.

### **Ecological Threat to Tundra Caused by Oil Field Development**

*94WN0349A Moscow SELSKAYA ZHIZN in Russian  
12 Jul 94 p 5*

[Article by Aleksandr Makhlin, Nenets Autonomous Okrug, Komi Republic: "The White Polar Fox. The Red Book. Black Oil..."]

[Text] It seems that J.B. Lamarck, who remarked about 150 years ago that man's purpose seems to be to destroy his race, first having made the earth inhabitable, turned out to be a prophet: man's influence on nature, trained not to expect any mercy from it, is finding an increasingly aggressive nature and in its scale and consequences has approached the actions of geological and cosmic processes.

From all appearances, it is now the turn for Bolshezemelskaya Tundra. Today, the richest fodder base of wild and domestic reindeer and unique habitat for the white polar fox and whitefish is gouged by the teeth of drilling rigs and is covered by unhealing sores of oil spills.

The tundra is alive for the time being. It is resisting, as much as it can, the increasingly powerful and thoughtless onslaught of man. The silent, not boundless, and easily wounded tundra has had enough of it for a long time!

It is not customary to say much in a Nenets tent. But it turned out that the 60-year-old reindeer farmer Prokopi Khozyainov and I ignored local etiquette. And it was all due to a photograph pinned up inside the house. In the picture was a middle-age Nenets in a deerskin overcoat and bags—and around him were polar fox carcasses. In producing the picture, the photographer outlined them as much as he could fit on the shoulders of the hunter, and spread the rest at his feet. Many. Several dozen.

"You?" I asked.

"Yes," replied Prokopi, "in 1971."

"So many!"

"Really? You see, those are only the ones I did not have time to turn in. That year, I remember, I caught about 100 polar foxes. But there were even more."

"Was it worth exchanging your carbine to become a shepherd?"

"There were very few polar foxes left on the tundra. Six years ago, when I again caught only two dozen for the season, I decided to quit hunting. I had to live on something."

"Maybe just your hunting luck had changed?"

"If only that were the case..."

The white polar fox is one of the main objects of a traditional hunting, which up to now did not simply guarantee employment of the indigenous population of Bolshezemelskaya Tundra but also enabled them to exist rather well. They caught animals in large numbers and of superb quality, comprising almost the bulk of the fur purchased by the state.

However, the situation has radically changed in the last two decades. The chairman of the Usinsk City Committee for the Protection of Nature, Viktor Valentinovich Polshvedkin, showed me an interesting document—a mathematical model predicting the future fate of the fur industry in the Yamal, Nenets, and Komi lands. The complex of nature scientific research conducted from 1960 through 1988 and backed up by an abundance of statistical material yielded quite unexpected results. Despite the fairly high level of organization of hunting structures, the catch of white polar foxes declined one-third during this time and by the year 2000 will drop to the zero mark.

What is the problem? Poaching? Inefficient hunting? This probably had something to do with it. However, V.V. Polshvedkin sees the main cause as the swift development of industry in the Far North, above all, the oil and gas industry.

Without a doubt, development of the tundra has its costs, which are simply impossible to avoid. For example, alienation of large territories as a result of erecting and operating all kinds of production facilities and saturating these territories with people and equipment. But is such a situation really only in the Russian Federation?

"Take Alaska," Polshvedkin develops the thought. "There the number of polar foxes is increasing from year to year, and no one is surprised by an animal's appearance on Alaskan streets. It turns out that the problem is not the development itself, but how intelligently and farsightedly it is conducted."

As a result of the deterioration of the ecological situation throughout the world, problems have arisen forcing the U.S. and Canadian governments to form a clear position with respect to the north: they view these territories not only as a resource reserve but also as a large natural reserve of territories for future location of industrial

production facilities and resettlement. Back in the 1970's, the U.S. Congress came to the conclusion that in determining the prospects of Alaska, priority must be given to preserving this region as an ecological reserve.

That is why even with small earth-moving operations, the surface layers of soil are removed and stored for subsequent restoration. A contractor is obligated to return spawning grounds back to their original appearance if they were damaged during construction, operation, or repair work. A state representative can simply halt a contractor's activities in habitats of fish and animals during their breeding, nesting, or migration.

What about in our country?

...From here, from a height of several hundred meters, I simply did not believe that this cheerful snake, the Domkin-el River, glittering in the sun, was dead. You see, it carries its waters somewhere, flows somewhere...

But it would be better if it did not. They killed it, thoughtlessly, brutally. It has been made a source of pollution for a long, long time. This happened in 1967 when cleaning up an oil spill. Having destroyed virtually all the coastal vegetation with bulldozers, they buried the oil under ground here, on shore. Since that very time, the Domkin-el, once clean and full of fish, was turned into a gutter.

...The shiftworkers with whom I came with by helicopter to the drilling rig were shouting above the roar of the MI-8's engine, carrying on a desperate argument.

"Oil is gold!" one said sharply. "Mark my words, the day will come when they will pay the oil industry worker's wages with it, pure gold."

"First, let us start lining our work clothes," another added.

"I will tell you, muzhiks," a third said, "oil has at all times been queen of the ball."

And suddenly came the words of an old drill man, in disharmony like a tub of ice water on the hot heads:

"...Heck, as far as I am concerned, a quilted jacket is better, as long as there is a healthy liver under it. Gold will not overcome cirrhosis..."

...The shiftworkers did not say another word almost until we reached Kharyaga.

The Kharyaga oil and gas field is an area of new industrial development that is located completely on the territory of traditional activities of the indigenous population—hunting, fishing, and reindeer breeding. On the one hand are the benefits: oil and gas provide relative economic success for the region and an influx of currency into the Republic and the federation. On the other are the most serious ecological problems, on the solution to which the fate of the indigenous population depends entirely.

It is here, at the Kharyaga field, that an ever-increasing level of anthropogenic load from industrial enterprises, oil and gas pipelines, and roads is noted. The tundra vegetation is being killed. Lakes are dying that only recently were very clean and abundant with fish.

The ecological situation is especially alarming at the well clusters. By no means does everyone know that in drilling they use more than 40 chemical reagents containing a whole bouquet of toxins, for some of which the maximum permissible concentrations have not yet been developed to this day. And the total build-up of them in the soil is leading to mini-disasters that are unnoticeable at first glance. They are killing soil organisms, disrupting the processes of soil formation. Accumulating in hydrobionts that serve as food for organisms higher in the food chain, they in turn end up in the food for animals and man. The situation is similar to the innocuous snowball released over the steep mountainside: at first it is small and delicate, and at the end of its trip it destroys everything.

That is why today in the Kolva River basin you no longer encounter the once common osprey and buzzard, the white-tailed bald eagle and polar owl. A degradation of schools of whitefish has begun; their numbers have decreased by a factor of nine (!) in the last decade. Less and less reindeer moss pasture is left for the reindeer, and the white polar fox has to go farther and farther towards the Arctic coastline to look for food.

Now about it, the polar fox.

There are two color photographs of the same landscape, taken from a helicopter. The first was taken 20 years ago; the second last year. They differ from one another: the first is grayer and unattractive; a green color is predominant in the second. It is not caused by the quality of the print. They are willow groves, whose advance on the tundra is becoming increasingly swift with each year.

Willow groves, the product of acid rains caused by increasing waste from industrial enterprises—mud, nitrogen and sulfur oxide, as well as soot and other solids—are not all that good for the tundra. And especially because they completely push out the grasses, which are the only food for the tundra mouse and lemming. Brush and reindeer moss lands are not spared.

This "snowball" goes further. Willow groves, beginning to grow at the foot of small hills, climb up to their peak in a few years. Deprived of its food base, the lemming is disappearing. No lemming, no polar fox. No polar fox, no one to hunt and, consequently, nothing on which to exist on the tundra.

V.V. Polshvedkin's prognosis: the fate of the white polar fox is predetermined. No, as a species it possibly will not disappear. But it no longer will ever become an object of traditional hunting.

Sadly, another representative of the fauna of the Bolshezemelskaya Tundra is on the verge of disappearing. A terrible thing is the degradation of the indigenous population, caused by the loss of traditional hunting raised to the level of a true art.

...He believes that he is lucky—he got off with two years suspended. It could have ended worse.

Driving a herd of reindeer, Vasilii Filippov caught two tipsy lads from a neighboring drill rig at Severnaya Shapkina. They were preparing to drop a knapsack of chlorine into a stream that feeds into a lake. Outraged by the savagery of what was taking place, the shepherd began to reason with the poachers. But when one of them took up an ax and came at him, Vasilii did not restrain himself, whipped out his carbine from the reindeer sled, slid the bolt back and, pointing in the air, put both of them on the ground. He beat up one and the other. He took the ax and hunting knives. Finally, he poured the chlorine on their pants.

"...Here the same stream and lake," Vasilii uttered when we reached the mirror-like reservoir. "They have been feeding shepherds on drives for more than 15 years. Many fish... Now you would be surprised," and he began unreel the simple tackle.

"Tell me, have there still been attempts to poison the lake after that incident?"

"God has shown mercy so far."

"Do you regret what happened?"

The shepherd did not have time to answer. A heavy splash was heard, and in that instant Filippov's fishing rod bent into a sharp arc—a big 18-pound fish, cutting the surface of the water like a sail fin, was desperately trying to get rid of the hook...

Fortunately, small protected islands similar to this one have been preserved on Nenets land. Northern and southern Shapkina cascades of lakes, rivers, and streams are striking by their primordial purity, severe and still attractive beauty. Each lake is a unique monument of nature. Individual lakes, thanks to the karst depressions, reach 50 meters in depth and pose considerable interest for scientists. This is a real paleontological Klondike: dozens of types of fossils—representatives of the flora and fauna of the Devonian period—are scattered in the literal sense under the feet. Countless flocks of nesting geese, mounds stuffed with broods of ptarmigan, unfrightened polar foxes yelping right at the tent, huge graylings almost jumping on the empty hook—this is all Shapkina.

V.V. Polshvedkin urgently recommended visiting these places in order to come back in about 10 years and compare what I saw with what it had become. Already quite a few reservoirs like the Shapkina ones have been ruined by the oil and gas production workers. Any day now they will come here—the nearest watch is 10-12 km from the lakes.

"Are they really doomed?" I asked.

"If we contemplate with indifference what is taking place, then yes. If we begin to act competently and purposefully, uniting forces, possibly we will save it."



And the chairman of the Usinsk City Committee for the Protection of Nature is acting. Not denying the truth that sometimes he is alone on the battlefield, he is still convinced: the main thing is not only to go into the field and brandish a spear, but also to win. But this is impossible to do alone. That is why Polshvedkin is looking and finding people holding similar views, outstanding people not indifferent to the fate of the Bolshezemelskaya Tundra and able to think about the future. These are people such as the director of the Usinsk Engineering and Economic Center, Candidate of Technical Sciences Gennadiy Grigoryevich Zaripov, author of a number of works on environmental protection, the general director of the "Kombineft" Joint Stock Company, Valentin Zinoviyevich Leonidov, supporting environmental protectors not only by patting the back, as is customary almost everywhere in our country, but also with equipment and, what is particularly important, money. Without looking for hooks in the laws, the city and rayon administration is rendering all possible support to the ecologists. Hence the results. Monitoring of the ecological condition of oil and gas producing enterprises is being made increasingly tougher. Plants for stabilizing oxidized petroleum, unlike any in the Russian Federation, have been created and are being assembled. In the zone of special attention, the city found the necessary funds to erect slag storage tanks despite the empty budget purse. For a long time now there has been no question about the quality of operation of the city purification plants.

The list is impressive. But here is what Polshvedkin himself thinks about this:

"In essence, we have made a miser. You see, whereas in Usinsk we have somehow managed to use the forces of our own committee and the public to set up proper monitoring of the activities of enterprises—they are all in the public eye—work at drilling rigs is virtually dropping out of the field of view of ecologists. Another problem is the technical condition of the oil pipelines. They are what most often create the most critical situations."

And this is the truth. There has not been a year that oil pipelines of the main and flow lines of oil and gas production departments based in Usinsk did not burst. For example, there were 58 (!) accidents recorded in 1988. You can imagine how much oil has been discharged onto the tundra. In Usinsk Rayon alone, 20,000 hectares have been polluted. In 1992, bodies of the State Committee for the Protection of Nature presented claims for more than 800 million rubles [R] against the "Kombineft" Joint Stock Company. The amount of the claim was R702 million for only two accidents on the Vozey-Golovnyye Facilities oil pipeline. But can these millions of rubles really compensate for the real damage to nature?

The technology of accident elimination is primitive. A gigantic oil spill of about 35-40 tonnes (the average

amount of losses in one accident) is covered with approximately 4,000 cubic meters of sand and mixed. Then the mixture is hauled by dump truck to another specially prepared area. And that is it. If you do not consider that the costs for accident elimination exceed many times over the cost of the oil lost, instead of one area of pollution we end up with two—the site of the spill, with up to 10 tonnes of oil remaining in the ground, and the site of the new burial. Meanwhile, oil, not oxidizing for years, gets into the ground waters and poisons reservoirs and water-bearing strata. An example of that is the settlement of Verkhnekolvinsk, which was left without drinking water. It is now delivered there in tanks.

What is the solution?

Above all, V.V. Polshvedkin is deeply convinced that it is necessary to do everything possible to minimize the number of accidents and set up the strictest ecological inspection at oil and gas production sites. Every meter of oil pipeline and every drilling rig component should be certified by the appropriate acts and their technical condition periodical checked. This is what is being resolved on site.

But there is another quite important condition of successful resolution of the problem of survival of the Bolshezemelskaya Tundra. In the opinion of Polshvedkin and persons holding similar views, a serious adjustment of the tax and finance policy of the Republic and Federation is necessary. Why not decrease taxes on those enterprises that operate ecologically clean? If we do not allot credits for construction of environmental protection facilities at fair and not enslaving interest rates, in the end will we not lose immeasurably more? And, conversely, why should be sensitively punish those who are destroying nature?

...A white rectangular envelope. Fine, illegible handwriting. It was from him, Vasily Filippov, the person with whom we had spent about a week at Severnaya Shapkina. In the envelope was a sheet of notebook paper folded in fourths.

"...Remember the lake where we caught the graylings? Well, it is the end of that lake—it is covered with a film of oil. It may have come from under the ground from streams and maybe something else. In short, the end came. A pair of swans landed on the water, and when they took off, their stomachs were black."

"Tell me, what do we do next? Pick up a carbine and show these vile people what is what? So, that is what I will do; it seems to me that you know me already."

Perhaps, Vasily is a reliable muzhik and does not waste words. That is also why I hurried with a reply. As much as I could, I tried to make my friend understand and prove that weapons are far from the best method of fighting for the preservation of nature and that we can and must fight by other, far more effective and bloodless methods.

It is good if Filippov listens to my (to be honest, not altogether convincing) arguments. But what if he does not?..

### **Moscow City Duma Deputy on Nuclear Reactors, Potential Dangers**

944F1314A Moscow KURANTY in Russian 5 Aug 94  
p 4

[Interview with Vladimir Katushenku, deputy of the Moscow City Duma, by Nikolay Figurovskiy under "Nation and Authority" rubric: "The Echo of Chernobyl Is Still Heard on the Streets of Moscow"; date and place not given]

[Text]

[Boxed material] V.K. Katushenku, 41, has been in the armed forces since the age of 17. He finished the Military Academy for Chemical Protection. He has more than 100 inventions and scientific works. He is a specialist on the problem of reducing environmental pollution. He was awarded the Order of the Red Star for his participation in cleaning up the accident at the Chernobyl Nuclear Power Station. He is a coordinator of the duma for questions of charity and social security for those suffering from the effects of technology.

[End box]

This year marked the eighth anniversary of the terrible day when they reported to us on the "technical malfunctions" at the Chernobyl Nuclear Power Station. The echo of the accident at Chernobyl is still heard in many cities of Russia, Ukraine, and Belarus. Nor did it bypass Moscow: there are thousands of people involved in the Chernobyl cleanup living in the capital. And there is still the problem of nuclear reactors within the city limits. We talked with Vladimir Katushenku, deputy of the Moscow City Duma, about these and other problems.

**Figurovskiy:** Vladimir Kuzmich, the Moscow Council once made a decision to close all reactors located in the territory of Moscow. This decision was not fully implemented. Do nuclear reactors represent a danger for the city?

**Katushenku:** Certainly the reactors in the city territory are a constant source of great danger. And it is not even a matter of the danger of an explosion, for even industrial discharges may represent a danger: it is no secret, for example, that the nuclear power installations of the Institute imeni Kurchatov are located not far from the Moscow River in the rayon of Cerebryanny Bor. Other potentially dangerous facilities are located in the same rayon.

Nevertheless, it is difficult to say that the arbitrary decision to shut down reactors was reasonable. In the first place, many of them such as, let us say, the reactor at the Kurchatov Institute are included in programs of importance for the entire nation and it is not our business to interrupt them. Secondly, to shut down

reactors means that tens of thousands of Muscovites who work in their servicing and support and so on out would be thrown out on the streets.

Still, this problem must be resolved. The reactors must not be closed but moved out of the city to prepared scientific bases beyond the MKAD (Moscow Circular Automobile Road) or even to neighboring oblasts. But this requires careful scientific preparation and enormous funding, which you understand is now simply lacking.

**Figurovskiy:** What should be done?

**Katushenku:** I am opposed to arbitrary decisions and I think that it must be economically disadvantageous to pollute the environment. Unfortunately the Moscow Council professed a different ideology and instead of establishing a serious normative base it frequently limited itself to populist decisions. The civilized approach to this matter must provide for the payment of compensation to the inhabitants for losses from institutions and departments that contaminate the environment or that create a potential danger. In this event, the dangerous facilities will be closed or moved out of Moscow under economic influences without administrative pressure.

**Figurovskiy:** One of the directions of your work in the city duma is social assistance to those suffering from technological influences. Could you talk about this problem in more detail?

**Katushenku:** It is no accident that I took on this work in the duma. In my electoral district (and this is Strogino, Shchukino, and Khoroshevo-Miyevniki), there are a number of institutions having to do with nuclear problems. Their workers have been subjected to the effects of ionizing emissions and to some degree or other they need help. In addition, there are many institutions in Moscow where the people work under harmful and especially harmful conditions. I personally know about their work and want to help. But still, the most painful subject for me is Chernobyl.

**Figurovskiy:** Today, more than eight years later, how do you see the consequences of Chernobyl?

**Katushenku:** A great deal has been said and written about Chernobyl but no publication is reflecting the true scope of the consequences of this disaster. More than seven years ago, Dr. Gale predicted a burst of illnesses among the victims. Optimists from our state medicine contrasted this with the rosy picture of "insignificant danger as a result of the effects of radiation on people." But life confirms the prognosis of the world-renowned scientist.

More than 800,000 people took part in the elimination of the consequences of the accident over three years. There were 33 deaths in 1986. By 1991, the number of those dying from illnesses related to the cleanup exceeded 7,000. And the number of disabled of different groups amounted to more than 2 percent. By the beginning of 1994, the figure of 2 percent was already the number of dead; 4 percent were disabled.

These many figures show graphically the danger of the situation and reflect the dynamics of the illnesses having to do with the Chernobyl disaster. Analysis carried out by the Moscow Scientific Institute for Diagnostics and Surgery shows the structure: of the total number of persons falling ill, 18 percent had malignant tumors, 32 percent had various diseases, and 44 percent illnesses related to nervous disorders. Finally, 13 percent of those persons end their lives through suicide....

At the same time, it is necessary to remember that those engaged in the cleanup of the accident at Chernobyl Nuclear Power Station were healthy young men! The actions of bureaucrats, the improper execution of the social protection of citizens, and frequent violations of the law led to a situation in which they could not cope with the problems and preferred to give up their lives. Here 40 out of 1,400 helpers in Tambov Oblast end their lives through suicide.

According to official information, how many participants in the cleanup of the consequences of the accident at the Chernobyl Nuclear Power Station live in Moscow?

There simply are no official data, because different departments—the Ministry of Defense, the Ministry of Atomic Energy, social security, and various public organizations—name different figures. According to the latest information, there are about 25,000 helpers and Chernobyl-disabled living in Moscow.

Is the state doing anything for the people of Chernobyl? How about city authorities?

The state has passed a number of legislative acts that may resolve many problems of the situation. As usual, the lack of budgetary resources is an obstacle to the resolution of all urgent problems. Here it is obvious that there is a need for nonbudgetary financing. The law on social protection makes it necessary to find such sources through the economic activities of the public organizations of the people of Chernobyl and their enterprises, which would benefit from the credit advantages.

Various laws and decrees have defined the priority of social protection in the country's legislative acts. But those same state agencies and bureaucrats have issued laws and related acts that restricted documents and created an orientation or made them nonviable.

It cannot be said that the privileges were granted without justification. In some cases the share of the budget were much greater than the share of the public organizations and their enterprises received from the advantages and provided to aid the people of Chernobyl.

So what is the reason for the obvious insufficiency of nonbudgetary sources of social assistance? What do you see as the way out of this situation?

**Katushenko:** There are many reasons here. The main one is the granting of privileges to public organizations irrespective of the social programs that they carry out. The seemingly obvious idea of the necessity to provide supplemental funds for the needs of specific victims and above all disabled persons, the sick, and individuals receiving increased doses was not protected either by normative acts or by the instructions for their introduction. It seems to me that the way out is course taken by the Moscow City Duma.

**Figurovskiy:** Tell about this in more detail.

**Katushenko:** In the scope of the Moscow tax legislation of 1994, for the first time an attempt was made to protect the needs of the people from Chernobyl with a minimum participation of guiding structures of public organizations. Additional privileges foreseen under Moscow laws are granted to provide medical assistance only to specific persons disabled as a result of the Chernobyl disaster.

We see that the approach that we have chosen is correct under one distinct criterion: the leadership of a number of Chernobyl public organizations is not showing the slightest interest in participating in the realization of the new privileges. Some officials from Chernobyl do not want to make the effort even to disseminate information on those disabled persons in need of treatment and rehabilitation, because the new laws do not permit the use of money for other than its designated purpose.

In the pages of KURANTY, therefore, I want to propose to disabled persons from Chernobyl living in Moscow and to their relatives that they appeal to me in the Moscow City Duma. I promise that not a single one of them will remain without help.

### Authorities Neglect Ecological Catastrophe In Aral Sea Region

94WN0384A Moscow NEZAVISIMAYA GAZETA  
in Russian 10 Aug 94 p 3

[Article by Ismail Zhalilov: "Aral Sea Is Dying.—Karakalpaks Next in Line"]

[Text] Specialists and scientists have now pointed out repeatedly at various meetings, conferences, and symposiums that the Aral Sea and the region's two major rivers—the Amudarya and the Syrdarya—are drying up as a result of human activity, and that the catastrophe began in the previous century with the Russian Empire's expansion, which the Bolsheviks and Soviets consistently continued on a fitting scale and with fitting blunders in order to produce as much as possible of their "strategic raw material"—cotton, in the process making the entire region hostage to a single crop. Now the superpower has collapsed, and the new "sovereign states," as they are customarily called, have arisen on its ruins as the former Soviet republics have retreated to their national apartments. It was expected that this would solve a great many problems, that many things



would fall into place generally, and that universal prosperity would ensue. But have those expectations panned out, have the problems become fewer? One of these manmade problems that have been consistently hushed-up is the catastrophe of the Aral Sea, and one of its consequences is the sharp increase in the dangerous trend toward the total disappearance of the Karakalpak people. This aim has been pursued for many decades now by the purposeful expansionist national and socioeconomic policies of the neighboring "fraternal" republics and now independent states with respect to the Karakalpaks, something that has now resulted in the almost total assimilation of the Karakalpaks who lived and are living now on their territories. This was promoted to no small degree by the Leninist nationalities policy of "big brother" and the third-class status of the Karakalpaks' autonomous republic, which had almost no rights. In 1991, having failed to put up sufficient resistance to Tashkent, which never wanted the Karakalpaks to have too much autonomy, Karakalpakstan found itself a sovereign republic and state within the sovereign Republic of Uzbekistan, putting on the customary yoke of "younger brother" now of the Uzbek people, and having entrusted the resolution of all issues at all levels of state administration to Tashkent and contented itself with the role left to it of a duplicate body that is unable, under the new Constitution, to adopt a single autonomous decision independent of the mother country. As for its state, legal, and economic situation, Karakalpakstan is far inferior to any of Uzbekistan's 12 oblasts in terms of basic indices, and there is not a single signed treaty or agreement between Karakalpakstan and Uzbekistan that explicitly regulates relations between the two states and two nations. Political forces, movements, and parties that would like, in accordance with the laws of the Republic of Karakalpakstan, to register themselves, operate, and fight for power using civilized methods are encroached upon by the institutions and enterprises where members of these parties and movements earn a living. Newspapers exist only at the expense of the state or from infusions from major budget-funded organizations, which in no way promotes free expression.

Today the people of Karakalpakstan, above all the Karakalpaks, are living in horrifying conditions caused by the ecological disaster and its consequences, a situation in which normal drinking water does not exist in nature, in which the liquid that flows in the rivers and canals can be called water only by a stretch of the imagination (for what flows in them is rather the solutions that wash off from the fields in the upper reaches and are discharged into the canals), in which even milk is mixed with pesticides. In effect, the people are becoming degraded: They give birth to mutant children, more than 70 percent of all pregnant women suffer from anemia and extragenital pathology of varying degrees of severity, and this situation has a pronounced character and a tendency to progress rapidly. The shortage of clinics and hospitals, and beds in maternity wards, the absence of

elementary conditions for normal life and the most basic medicines and dressings, and the glaring lack of sanitation, which are compounded manifold by the disruption of established economic and social lines of communication, are accompanied by fantastic price increases and inflation. All these things long ago turned Karakalpakstan into a region with all but the world's highest child and infant mortality rate, into a cursed region of ecological catastrophes and their fatal effects in which the entire population is sick and in which death for the living has become something commonplace and everyday, a kind of mandatory competition.

Misha Lobko, a Frenchman of Russian origin who visited Karakalpakstan in the fall of 1991 in order to make yet another film about yet another manmade ecological ulcer on this planet, compared the ecological disaster of the Aral Sea and its consequences for the region and the rest of the world to 20 Chernobyls. But while the press and television of the entire world report on the Chernobyl calamity and tremendous material resources have been mobilized to cope with it, the Aral catastrophe and the tragedy of the entire Karakalpak nation are neatly hushed up with the "pillow" of non-disclosure of state secrets, apparently through the efforts of the special services and local authorities, which have little interest in having their superiors think about them more than usual. Misha Lobko said it would be fitting for the UN, through its various institutions (such as the World Health Organization, the United Nations Environmental Programme, and others), to intervene here in order to take more effective and more radical steps to improve the situation in the region. In the meantime, there is a danger that a nation with a complex, little-studied history and an ancient and distinctive culture and traditions could disappear before the world's eyes within a brief historical span, sinking into oblivion like water into sand.

This author might be criticized for being excessively biased toward a single nation and indifferent to members of other peoples inhabiting Karakalpakstan. But the fact is that the latter, if things become intolerable for them, can migrate to their native peoples' main lands and try as best they can to solve their problems, something we have already observed for the past year or two throughout the territory of the CIS. But the Karakalpaks, even if they emigrate one by one or in groups to a different environment and different territory, will inevitably be subjected to assimilation and ultimately cease to exist as a people and a nation. The Karakalpaks simply have no other native land, no other territory. This is the land of their ancestors, whose graves are here and whose remains have rested and spirits wandered here for thousands of years. But a totally uncontrolled process of migration among the Karakalpaks to other parts of the CIS and other foreign countries has been under way for some time, and it is intensifying in proportion to the deterioration of living conditions in Karakalpakstan, above all ecological and social conditions.

We are witnesses to a unique phenomenon that is taking place during the lifespan of a single generation of people—the disappearance before our very eyes of two of the greatest rivers of Central Asia and a splendid emerald eye on the face of the planet, the Aral Sea. Next in line is the Karakalpak nation, over whose neck an “ecological sword” has been raised. Will it come down with full force and will the “head” roll into the basket of mankind’s historical executions?

### Open Letter to Yeltsin on Appropriations for Ecology

94WN0393A Moscow *RABOCHAYA TRIBUNA*  
in Russian 23 Aug 94 pp 1-2

[Open letter to Russian Federation President B. Yeltsin from T. Zlotnikov, State Duma deputy from the 132rd Electoral District and deputy chairman of the Committee on Ecology: “Cheap Solutions. Will They Save Russia From Ecological Catastrophe?”]

[Text] *[Begin boxed material]* According to statistical data, the authorities have never generously loosened the purse strings for the needs of ecology. Nevertheless, in 1985, 0.32 percent of the gross national product was allocated in the budget for these purposes, and in 1988—even 0.36! Well, and today it is 0.15... Need we say more? *[End boxed material]*

Honorable Boris Nikolayevich!

I am forced to appeal to you with an open letter, since I have not received a response to any of the three deputy inquiries forwarded to you back in March of this year. I know of your attitude toward the law, “On the Status of a Deputy of the Federal Assembly,” including also in regard to such a “privilege” of deputies as sending a deputy’s inquiry to various institutions for resolution of questions which are of vital importance to our voters. Nevertheless, I am convinced that not only the deputies of the Federal Assembly, but also any citizen of Russia has the right not only to appeal to his president, but also to receive a response from you, or on your behalf.

I am writing specifically to you also because I made a certain contribution to your victory in 1991, since my article entitled “Ecology and the President” was published in the last issue of *ROSSIYSKAYA GAZETA* before the elections, on 11 June. In it, for ecological considerations, I named specifically only you as the best candidate for this high office.

Boris Nikolayevich! I do not want to admit my error, or perhaps, to some degree also my guilt. I hope that this open letter will reach you, if only through the press, and will receive adequate appraisal and effective reaction on your part.

In your message to the Federal Assembly, “On Strengthening the Russian State,” you announced: “We must be guided by the fact that ecological security is a component part of the national security of Russia. The government

has developed a number of immediate ecological programs, but their realization is moving at an extremely slow pace. Insufficient financing is making itself known. The Federal Assembly and the government will have to give serious attention to this problem. It is difficult not to agree with this. But then, why has the government which is subordinate to you shown its generosity by allocating less than 0.6 percent of the expenditure portion of the budget, or 0.15 percent of the gross national product for purposes of ecology? There has never been such a thing in any civilized, and even little-civilized country, although the troubled state, and in some places even the catastrophic nature, of the ecological situation obligate us to increase the financing of environmental protection by at least an order.”

I do not understand why the government does not use your message as a guideline.

A bit earlier, in February of this year, you signed another very important edict, which was also very timely for Russia. This was edict No 236, “On the State Strategy of the Russian Federation in Protecting the Environment and Ensuring its Stable Development.” Through this document, you assigned the government the task of ratifying within two month’s time its plan of action on environmental protection for 1994. Yet more than three months have passed already... Why does the government so openly and stubbornly ignore you and the demands of your edict and message?

So as to not make unsubstantiated statements, I will cite just a few facts in support of the anti-ecological nature of the proposed budget. No provision is made for financing the state programs: “Ecological Security of Russia,” “Conversion—Ecology,” “Creation of a Unified State Automated System of Control over the Radiation Situation,” “Reduction of the Level of Irradiation of the Population and Production Personnel at Natural Radiation Sources (Radon),” as well as the federal ecological programs on Baykal, the Caucasus Mineral Springs, and a number of others.

The system of state nature preserves is on the brink of collapse, since the funds allocated for financing the 78 natural preserves of Russia are enough to cover less than half their needs.

The formulated tendency toward reducing the financing of *Minpriroda* of Russia [RF Ministry of Environmental Protection and Natural Resources] inevitably leads to the disintegration of the the country’s environmental protection system which was created with such difficulty. The real expenditures for it are not comparable with those losses which we will incur as a result of such “economy.” If the direct ecological losses in 1993 alone throughout the country reached 15 trillion rubles (R), in the current year they are predicted in the amount of R43 trillion. This is more than 40 times higher than the expenditures provided in the budget for ecology!

It is symbolic that all this is taking place now, when the All-Russian Days of Defense Against Ecological Danger,

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proclaimed by special directive of the government, are being observed for the first time. I shall be brave enough to say that ecological danger for Russia's citizens begins with the anti-ecological policy of a government which develops such a budget.

Honorable Boris Nikolayevich!

On the threshold of the World Day of Environmental Protection, allow me to remind you of your last year's address in connection with this day (3 July 1993): "The right to breathe clean air and to drink clean water, as well as state guarantees of ecological security must be secured in the new constitution. Appealing to you, honorable citizens of Russia, on the Day of Environmental Protection, I call upon each of you to make whatever contribution you can toward revitalizing nature... throughout all of Russia. In this great and important cause there are no trifles. We will work together."

I am convinced that you, Boris Nikolayevich, as the guarantor of the constitution (Article 42 of which secures the right of a citizen to a favorable environment, and unfortunately this is only a right, and not a state guarantee of its implementation) must intervene in state ecological policy and correct the government, forcing it to fulfill the constitution. As well as your edicts and messages, and the Agreement on Civil Accord in regard to correction of the budget for the purpose solving the most acute and immediate ecological problems.

I hope that you will not allow the government to turn these important documents into a declaration and profanation. If we do not take effective measures today, then the socio-economic reorganization of our society becomes devoid of all meaning. There will simply be no one to live in it. Already today, the troubles of the ecological situation in the country have led to a sharp deterioration in the state of health of the peoples of Russia. For the first time, the life expectancy of men has dropped below retirement age. Freak-children are being born. In other words, Russia's citizens find themselves on the threshold of irreversible changes, which may be followed by collapse of the state and the perishing of its peoples.

With respect and sincere hope for a real solution to the formulated questions.

[Signed] T. Zlotnikova

State Duma deputy from the 132nd Electoral District  
Deputy Chairman of the Committee on Ecology.

[Editor's note] The deputy's inquiry of T. Zlotnikova was published in *EKOLOGICHESKAYA GAZETA*. Yet even through it, the people's elected representative did not receive an answer. This is why *RABOCHAYA TRIBUNA* is publishing the inquiry once again. Will we get through to our president this time?

## New Documents Detail Activities of 'Komsomolets' Expeditions

94WN0385A Moscow *NEZAVISIMAYA GAZETA*  
in Russian 11 Aug 94 p 5

[Article by Vladimir Svartsevich: "A Proving Ground for Our Conscience. The Submarine Komsomolets Was the Site of Their Death"]

[Text]

### The Silence of Military Bureaucrats

For five years the Russian and Western press have been taunted by the mysterious death of the nuclear submarine Komsomolets, which sank at a depth of 1,700 meters in the Norwegian Sea.

For five hours the sailors struggled to keep the nuclear submarine alive; 42 of the 67 crew members died. The remains of four sailors rest at the bottom of the sea, and 27 have not been found at all.

For five years we have known nothing about the causes of the destruction of the nuclear submarine Komsomolets. Relatives of the deceased sailors have been badgering the "authorized" organs to no avail. If the sailors carried out their duty to the motherland completely (one of the deceased was found in the icy water with a suitcase full of secret documents tightly fastened to his wrist by a metal bracelet), their immediate commanders are maintaining a deadly silence.

In the staff headquarters of the Northern Fleet and the Ministry of Defense, up until the last minute, they believed in the unsinkability of the underwater miracle of the 21st century. The naval military bureaucrats who were directly responsible for the life of the sailors turned out to be unsinkable. One thing is clear: If the unpleasant facts and evidence regarding the destruction of the submarine surface, they will "drown" people who were involved in the catastrophe. High positions, high titles, convenient bureaucratic jobs with the corresponding material benefits, the loss of which is tantamount to suicide for certain people—all these will sink to the bottom. Such is the price of the life of 42 deceased sailors.

And, although the Military Procuracy again brought criminal charges regarding the nuclear submarine Komsomolets, the department is assured of a "suspended case" (that is what they call unsolved crimes). As before, the tragic fate of the nuclear submarine Komsomolets is shrouded in a fog of secrecy.

The attempt on the part of the landing party of journalists who at the beginning of July for the first time went on board the scientific research vessel "Academician Mstislav Keldysh," which is now operating in the area where the nuclear submarine Komsomolets perished, to obtain intelligible information ended in failure. Frequently our questions and answers obviously irritated those with whom we spoke. On the second day we even



had to move out of the first-class cabin where high-ranking members of the expedition and foreign specialists stayed. They were afraid the academicians might loosen up at dinner and spill something to us. The deputy chief of the expedition, Oleg Kuznetsov, when moving us to a less prestigious cabin gave the excuse that the dishwasher had broken down. As before, the specialists and scientists are kept on a professional leash in the "first-class" and "special" sections, although the results of much of their research is not secret.

Nonetheless, NEZAVISIMAYA GAZETA got its hands on certain documents (their source wanted to remain anonymous) that tell of investigations at the site where the nuclear submarine Komsomolets perished, which were conducted by four expeditions in 1989 and 1992-1993. Published in abridged form, they shed a certain amount of light on the consequences of one of the largest catastrophes of the 20th century in the world ocean.

## DOCUMENTS

### Appendix 11

#### The condition of the elements of the nose section of the nuclear submarine Komsomolets

For planning work in the region of the nose section of the nuclear submarine, the following is the most important of what is known about the damage and destruction of the nose part of the nuclear submarine:

- In the first compartment, in the region of ribs 1-5, the upper part and sides of the solid body were destroyed, fragments of it were found inside the compartment along with internal elements and the contents of the compartment, the nose section of the nuclear submarine was practically sheared off, and perhaps it is connected to the rest of the body of the nuclear submarine only in the lower (keel) part;
- In the first compartment, racks of spare missiles and torpedoes were not found in their assigned place; they were probably destroyed during the explosion and their fragments, judging from everything, are underneath the destroyed hull and internal elements of the compartment;
- The torpedo launchers (TA) No. 6 (upper left) and No. 5 (upper right), which contain missiles with nuclear ammunition (YaBP), were destroyed on the side of the first section...;
- The missile and torpedo launcher No. 6 in the place where the breech end of the torpedo launcher was torn off was broken along the fuel block, and the interior of the pipe of the torpedo launcher is filled with what appears to be a homogeneous mass of a dark color, judging from everything—the product of interaction between the fuel block of the missile and seawater;
- The forward cover assemblies of torpedo launchers No. 5 and No. 6 were opened at an angle of 10-15 degrees, and the interior surface of the nose parts of

these torpedo launchers, where the nuclear ammunition is located, could be freely filled with seawater inside the nose end of the nuclear submarine;

- The forward cover assemblies of torpedo launchers Nos. 1, 2, and 4 (the lower series of torpedo launchers) were open to varying degrees (torpedo launcher No. 1—20-25 degrees, torpedo launcher No. 2—75-80 degrees, and torpedo launcher No. 4—40-45 degrees) and through their forward apertures came a "rock-like" mass of products of corrosion of torpedoes and missiles inside the torpedo launchers; it was practically impossible to observe torpedo launcher No. 3, but, by analogy with the other torpedo launchers, one can assume that it was in the same condition;
- In a niche behind the wave barrier in front of torpedo launcher No. 2 on a horizontal sealed platform is the torpedo warhead section (BZO) with its usual explosive, torn off from the torpedo, thrown out of the torpedo launcher, and turned perpendicular to the body of the nuclear submarine, and between the forward section of torpedo launcher No. 2 and the warhead section is a "beard" made up of rock-like products of corrosion.

### Appendix No. 12

#### Condition of nuclear and conventional ammunitions of the nuclear submarine Komsomolets

In the upper torpedo assemblies of the nuclear submarine Komsomolets (torpedo launchers No. 5 and No. 6), there are missiles containing nuclear ammunition, each of which contains about 3,000 grams of plutonium with an activity of about 200 curies.

In the lower torpedo launchers, there are two missiles with conventional ammunition (OBP) and two torpedoes with conventional ammunition.

On the racks in compartment one there were 10 torpedoes and six missiles with conventional ammunition.

The total mass of solid rocket fuel was 8,000 kilograms.

The total mass of conventional explosive substance was 3,500 kilograms.

When the nuclear submarine Komsomolets was sunk, under the hydrostatic pressure the nuclear ammunition bodies were destroyed and the automation system for nuclear ammunition ceased to function. The active nuclear ammunition materials are in contact with the seawater, and the plutonium in the nuclear system (YaZ) has corroded and changed into the fine dispersion (micron sizes) phase, and there are physico-chemical processes of corrosive destruction of the localizing cells in which the plutonium is located. As long as the localizing elements of the nuclear ammunition structure are intact the dispersed products of corrosion of plutonium will be limited in volume. The impact on the environment of products of corrosion of plutonium in the localized compartments does not appear to be dangerous.

After the destruction of the localizing jackets, the radioactive substances will inevitably escape into the environment when there is water exchange between the torpedo launcher and the external environment.

The corrosive destruction of the localizing jackets and the escape of products from the corrosion of plutonium into the environment are possible eight to 10 years after the accident, and, according to new calculation-experimental figures of the VNII EF [expansion not identified], this period could even be longer.

Here, however, it should be noted that corrosion is an important but not the only factor affecting the preservation of localizing jackets for nuclear systems. When estimating the time periods of possible destruction of the localizing jackets of nuclear systems, it is also necessary to take into account the consequences of mechanical, including explosive, impacts on the nuclear systems at the time of the nuclear submarine accident. For this reason and in order to avoid mistakes, the developers of the present project proposals consider it correct to use as a reference the minimum projected time periods for possible destruction of the localizing jackets of the nuclear systems.

Water could possibly flow into the nose end of the nuclear submarine as well. For this reason, after the destruction of the localizing jackets of the nuclear systems, the products of corrosion of plutonium, passing through the labyrinths (spaces) in the structures of the nuclear system, could be carried into the environment surrounding the nuclear submarine.

The explosive substance (VV) of the nuclear system has not exploded from the impact on the nuclear system of the hydraulic shocks and mechanical forces that appeared during the destruction of the compartments of the missile and the nuclear ammunition, and also from the explosive processes occurring in the first compartment of the nuclear submarine. Parts from the explosive substance of the nuclear system could have been damaged. Since the seawater practically does not interact with the explosive substance, it can remain in this form for a long time. Explosion of the explosive substance should not be expected also because its sensitivity decreases in seawater. Still, it should be kept in mind that, if it remains underwater for a long time, aggressive environments (ammonium perchlorate, LiON, etc.) could form, and, in contact with them, the explosive substance could become more sensitive. This must be taken into account when preparing for any possible work with the nuclear submarine.

The way the nuclear ammunition on the nuclear submarine is designed completely precludes the possibility of nuclear explosion from the time the nuclear submarine is sunk and when work is being conducted with the nuclear submarine. On the basis of the work experience and according to rough estimates, with an unfavorable confluence of circumstances (a particular volume of seawater with a particular concentration of radioactive

materials, which could happen only after destruction of the localizing jackets of the plutonium and other parts of the nuclear system and the ammunition and removal of the nuclear system being in seawater for a long time), it is extremely unlikely—but cannot be ruled out completely—that there could be a spontaneous critical reaction (STsR), which, however, does not present a real danger:

- The magnitude of the flash does not exceed  $10^{11}$  (16) neutrons;
- The local heating of the water will be no more than 80-100 degrees Celsius;
- The additional formation of radioactivity will be negligible, as compared to the radioactivity of the materials and the background level of natural and technogenic radionuclides;
- The event cannot cause discharge of products of corrosion of plutonium outside the torpedo launcher or mechanical damage to the elements.

Under the impact of hydrostatic pressure and other corrosive processes occurring on board the nuclear submarine Komsomolets after it sank, the torpedoes and ammunition with ammunition jackets located on the racks in the first compartment were destroyed and are a formless mass of metal mixed with explosive substance.

The results of the study of the explosive substance confirm that its sensitivity to detonation significantly decreases under the conditions of the deep-sea environment and with increased hydrostatic pressure. The sensitivity of the explosive mixture to mechanical influences in contact with the water does not decrease under hydrostatic pressure. According to the estimates of the developers, the explosive substance will remain stable for a long period of time (decades)...

### Appendix 13

#### The condition of the nuclear energy system of the nuclear submarine Komsomolets

...As a result of damage caused by the accident, at the moment of the destruction of the nuclear submarine, the nuclear reactor is a source of possible escape of radioactive substances into the environment.

The elements of the reactor and the nuclear submarine provide multistage protection that precludes dangerous radioactive pollution, since it prevents the intensification of the escape of radionuclides from changing significantly over a period of time.

In 1989, during the initial investigation of the nuclear submarine Komsomolets, there were no signs of radioactive pollution of the environment; the condition of the body and elements was satisfactory; and no serious damage was revealed. But, in 1991, for the first time, they discovered a small quantity of Cs-137, which does not present an ecological danger. The radioactive field in the region of the destruction of the nuclear submarine

had not undergone any marked changes in 1992. The investigation of the radiation situation in 1993 also showed that the level of gamma radiation and the concentration of radionuclides were close to those of the natural environment.

The actual position of the nuclear submarine on the bottom and the fact that the pressure in the first contour is equal to that outside completely rules out unsanctioned movement by regulatory organs regardless of how long the nuclear submarine remains in this condition. Only if the nuclear submarine were turned to an angle of 145 degrees could the KG [expansion not identified] escape from the active zone and create an emergency situation that violates nuclear safety....

...According to available data, as a result of an explosion in the first compartment, there could be a break in the fastening of heavy equipment within the body of the nuclear submarine, including the nuclear reactor. Nonetheless, in the absence of water exchange in the region of the reactor compartment, it is not very likely that radioactive products could be carried into the environment. Constructing a sarcophagus and subsequently filling the space between it and the body of the nuclear submarine with a special hardening compound could contribute significantly to reducing the exchange of water between the nuclear submarine and the environment. But, in practice, the installation of such a sarcophagus presents a complicated technical problem since it requires the development of deep water equipment and technology for pumping the sealing compound. In world practice there is no experience in conducting such sea operations. With the installation of the sarcophagus, it would even be difficult to monitor the condition of the installation (for example, the possibility of taking samples).

#### Conclusion

The results of on-site measurements confirm the theoretical estimates and model experiments, from which it follows that the speed of the escape of activity from the reactor installation does not exceed 0.1 curie per year and will not undergo significant changes if the submarine Komsomolets is left on the bottom for a long time. Consequently, one can assert with confidence that there will be no impact on the environment of the nuclear submarine from the activity contained in the reactor system.

On the basis of the totality of calculated estimates and model and physical experiments, one can assert that there is no radiation-ecological danger from the nuclear energy system now and there will be none in the future.

If necessary, it will present no difficulty to seal the only channel for escape of gamma activity—the ventilation pipes from the reactor compartment. But, participants in an expert conference conducted on 23 September 1993 think that in the foreseeable future the reactor cannot become a source of appreciable radioactive pollution of the environment and, therefore, it would not be expedient to do any work aimed at localizing the reactor....

#### Experimental Site

The site of the destruction of the nuclear submarine Komsomolets today is a testing ground for numerous research projects. The tragedy made it possible for scientists and specialists to conduct unique studies, measurements, experiments, tests of new technologies, etc. It is a special "feast" for scientists engaged in the study of the impact of radioactivity on the water environment.

#### 'Academician Mstislav Keldysh'

A unique collective of specialists in sea measurements, who are capable of solving any problems related to changes in the radioactivity of the sea, are working on board the scientific ship. Scientists of the VNI EF (Arzamas-16) have made a large contribution: They have organized radiochemical processing of samples and realized the possibility of obtaining express information on the existence of plutonium in the seawater.

As Mikhail Tolokonnikov, chief of the Main Administration for Work in Seas and Water Areas of the Ministry for Emergency Situations, emphasized, the special feature of the fifth expedition is that for the first time in domestic practice a unique operation has been conducted for sealing the nose part of the torpedo launchers. Using deep water Mir equipment, special titanium plugs weighing 30 kilograms have been installed on the wave barriers of the torpedo launchers. Russian specialists did the intricate work under extremely difficult conditions: There was a storm rated at 4 points, a strong underwater current, and poor visibility down below.

These and other "tightrope" operations at a depth of 1,700 meters were performed by Russian aquanauts for miserly pay (a month's salary is R83,000 plus \$5 an hour for each submersion—which last a total of 10-15 hours). The aquanauts have no social guarantees in the event of death or injury or special rehabilitation after a sea campaign.

As was confirmed by an academician of the Russian Academy of Sciences, deputy director of the Institute of Oceanology, Mikhail Vinogradov, during the fifth expedition the biologists discovered living organisms at the depth where the nuclear submarine is lying. They are migrating into the upper layers of water and are food for herring. In the near future, scientists will receive an instrument that will make it possible to scrape "animals" from the body of the submarine and the ocean floor. This will make it possible to establish the degree of concentration of nuclides in the animal organisms. Only then will it be possible to establish whether or not "glowing" fish dishes will find their way to our dinner tables.

Raising the ship itself is very problematic. Damaged by the strong explosion and a blow on the bottom, the nuclear submarine could break into pieces. Foreign specialists, particularly the Dutch, suggest a plan for constructing a concrete sarcophagus. According to preliminary calculations, this will take 6,000 cubic meters of high-quality concrete for walls 1 meter thick.



### Certificate of Reliability

The fifth expedition to the site of the destruction of the Komsomolets, organized by the Russian Federation Ministry for Affairs of Civil Defense and Emergencies (MChS) is laying the foundation for further study. The need for this and also Russia's responsibility to the world community, it seems, is finding support in our government. For the fifth expedition, for example, R4 billion and \$1 million were spent from the Russian budget. The international Komsomolets fund also participated in financing the expedition and the Dutch Government allotted \$1.2 million. The MChS, which at the present time, is the main coordinator of the work on the nuclear submarine Komsomolets, is developing the concept for the creation of an interdepartmental rescue group that will help in the future to react immediately to all kinds of submarine and surface catastrophes and disasters both inside Russia and abroad. The need for this is obvious. The practical activity of the young ministry (little more than three years have passed since its creation) arouses envy among certain departments and individual opponents. Frequently the MChS and its leaders are reproached for incompetence and poor professional training. Perhaps there is a grain of truth in this. But, today they are Russia's main rescue team, and their work has received international recognition. Such a certificate of reliability was earned by extremely hard work, and not everyone can present it.

I am confident that before very long there will be a need to create Russian rescue detachments in space and possibly also for work on other planets and in other galaxies.

### The Proving Ground of Conscience

There are quite a few tragic mistakes in our state's history. The catastrophe of the nuclear submarine Komsomolets is one of them. But, as they say, every cloud has a silver lining. Thirty years ago, did the creators of the "miracle of the 21st century" and the sailors who died think that they would now be saving thousands of workers of the military-industrial complex, scientists, and specialists from unemployment? Did they think that the nuclear submarine with its proud communist name Komsomolets would be a proving ground, and for Russia also a proving ground of conscience? Did they think that in order to achieve the truth, from Russia's scanty budget, it would be necessary to spend billions of rubles, forcing us taxpayers to pull in our belts a little tighter?

Unfortunately, an unhealthy situation and agitation in the press have developed around the work at the site of the destruction of the nuclear submarine Komsomolets. I think it is time to put a stop to the bureaucratic fuss and the unprofessional grumbling about the uselessness of the work that is being conducted. These people are bombarding presidential structures, the government, the ministries and departments, and our world public with blatant misinformation. It is time to call to responsibility

those individuals who are trying to turn a noble cause into a source of personal enrichment.

We have a large amount of responsible work before us, which should serve the fatherland in avoiding such mistakes in the future and, the main thing, save human life.

### Pacific Fleet Denies Plans To Dump Radioactive Waste at Sea

MM0609104594 Moscow KRASNAYA ZVEZDA  
in Russian 6 Sep 94 p 1

[Report by Andrey Gavrilenko: "Pacific Fleet Will Not Dump Radioactive Waste in Far East"]

[Text] Pacific Fleet—Fleet Commander Vice Admiral Igor Khmelnov has denied a recent report in some of the media that the Pacific Fleet command has appealed to the Russian Federation Government to allow the dumping in the Sea of Japan of 2,000 cubic meters of liquid radioactive waste stored aboard the tankers TNT-5 and TNT-27.

Currently, according to the vice admiral, the liquid radioactive waste situation is less of a threat mainly because the fleet has already received an experimental processing installation from Moscow and has tested it by purifying several hundred tonnes of waste. The commander stressed that the installation, which has produced good results, will continue to be used by the fleet, and all the accumulated liquid radioactive waste will soon have been processed with its help.

### Pacific Fleet Will Not Dump Radioactive Waste in Sea

LD0109154594 Moscow INTERFAX in English  
1355 GMT 1 Sep 94

[Text] In his interview with Interfax Thursday commander of Russia's Pacific Fleet Vice Admiral Igor Khmelnov reported that the Pacific Fleet will not dump liquid radioactive wastes in the sea.

Khmelnov refuted the recent message of the Russian State Atomic Committee stating that the Pacific Fleet command had asked the Russian government for permission to dump about 2000 cubic meters of liquid radioactive waste being stored in the TNT-5 and TNT-27 tankers into the Far Eastern Seas.

According to Khmelnov, the matter concerns a delayed reaction to his June address to the Naval headquarters when he spoke of the tense situation concerning the storage of waste in the overloaded tankers.

He said that at the moment the situation arouses less concern largely due to the fact that the Pacific Fleet has already received a test device to re-process liquid radioactive waste and has tested it by purifying about 300 tonnes of wastes.

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Khmelnov underlined that if the device proved to be reliable, the Pacific Fleet will utilize it and in the near term all waste will be re-processed.

Vladimir Bulygin, head of an expert group which participated in testing, said that in accordance with the results of the testing one can make a conclusion that the liquid radioactive wastes which are being stored on the tankers will be re-processed in the course of several months.

He also believes that if this work is properly financed it will be possible to create powerful devices which will resolve the problem of liquid radioactive wastes in the Pacific Fleet.

In January 1993 Japan and South Korea made a sharp protest due to the dumping of about 1000 cubic meters of waste into the Sea of Japan from the TNT-5 tanker.

### **Discarded Kerosene Lake Threatens Azov Sea Waters**

MM0109120794 Moscow IZVESTIYA in Russian  
31 Aug 94 p 5

[Report by Andrey Aderekhin: "Kerosene Threat to Sea of Azov"]

[Text] Yeysk—Some residents of the city of Yeysk take jerricans down to the shore of Taganrog Gulf in order to collect... aviation kerosene there.

Fishermen were the first to raise the alarm in the early nineties. The fish caught in this zone simply had to be discarded—they reeked so of kerosene. On investigating the strange place, specialists discovered a terrible picture. Below the steep shore, in a belt extending approximately 1 km from the land, kerosene was gushing forth into the sea and spreading in the form of a film over the surface of the water for several square kilometers.

It has turned out that Yeysk is obliged to the military for this "deposit." An oil dump, the airfield of Yeysk Military Aviation School, and a troop unit are located here not far from the shore. Through negligence, over many years kerosene had found its way under the ground. For example, surplus that accumulated at the oil dump when weather was unsuitable for flying was simply poured onto the ground in order to make room for new tankers from the oil refinery without disrupting the schedule.

Over several decades an entire subterranean lake formed alongside the seashore. According to some estimates, it now holds up to 250,000 tonnes of kerosene....

In the end the specialists concluded that the discharge of kerosene into the sea could be prevented by means of a reinforcing dike. The military admitted their guilt, and the Ministry of Defense undertook to fund the construction of such a dike.

I walked along the ill-starred gulf shore with Leonid Bakhayev, director of the "Azovberegozashchita" state enterprise.

"Last year the military was late in paying the stipulated 170 million rubles," Bakhayev said. "As you see, with those funds we managed to lay down part of the dike. But only approximately 1 km, whereas 2.5 km are needed. Otherwise there is no point, and the kerosene will continue to escape into the gulf. In addition to extending the dike, we also have to construct a protective screen. But there is no money for this work."

Meanwhile, whereas last fall one liter of sea water here contained up to two milligrams of petroleum products, this spring up to six milligrams were being recorded—100 times above the norm.

The high shore is collapsing disastrously quickly, and the sea itself is "moving" toward the dangerous lake. Today they are separated just by tens of meters.

### **Totsk Military Site Termed 'Source of Ecological Danger'**

LD3108230794 Moscow INTERFAX in English  
1742 GMT 31 Aug 94

[Text] The Totsk military complex located 200 kilometers from Orenburg (the administrative center of the largest region in the South Urals) is a source of ecological danger because of earlier tests of nuclear and chemical weapons, the administration of the Orenburg Region told Interfax with reference to Defense Ministry archives. Fragments of radioactive materials may still be present on the testing ground.

In 1954, troop exercises with the use of nuclear weapons were held on the Totsk testing ground under Marshal Zhukov's command. During the exercises, a 20 kiloton bomb was exploded on the ground, which is comparable with the nuclear explosions in Japan in 1945. The air explosion occurred at an altitude of 300 meters—twice as high as the explosions in Hiroshima and Nagasaki.

The local sanitary services report that from 1950 to 1990 the incidence of oncological diseases in the region increased 2.5-4 times and the death rate caused by malignant tumors increased 5 times from 1976 to 1990. The number of children with congenital disorders increased five times from 1960 to 1992.

In addition to this, Soviet-German air and ground tests of chemical weapons were held on this testing ground from 1926 to 1933. Local environmental protection organizations report that the ground and water in this region still contain large amounts of chemicals and components of weapons of mass destruction.

### **Yeltsin Greets Participants of Ecological Forum in Moscow**

LD3108164894 Moscow ITAR-TASS World Service  
in Russian 0745 GMT 31 Aug 94

[Text] Moscow, 31 Aug (ITAR-TASS)—Russian President Boris Yeltsin has sent greetings to the participants of the Ninth General Assembly of the international

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organization of parliamentarians for a balanced environment (Globe International). The text of the message, circulated by the Russian president's press service, is as follows:

"I send heartfelt greetings to the participants of the Ninth General Assembly of the international organization of parliamentarians for a balanced environment (Globe International) who have gathered in Moscow!"

"Ecology acknowledges no state borders. The problems of preserving forests, reducing the release of gases that cause the greenhouse effect, preserving the biological variety of our planet, and using rationally resources of land and sea zones and the open ocean call for coordinating the efforts of scientists, politicians, and legislators of different countries."

"The fact that Russia became a member of Globe International in 1992 and set up an inter-parliamentary committee, Globe Russia, has opened up new possibilities in this important affair. We are grateful to Globe International for its support of the moratorium on nuclear tests announced by Russia, France, the United States, and Great Britain. This promotes international detente and the movement for the non-proliferation of nuclear weapons. In the course of the 'Putina' operation, Russia is implementing Globe International initiatives to protect the internal territories of the Sea of Okhotsk and the Bering Sea. I have no doubt cooperation between parliamentarians will start off new undertakings in the sphere of environmental protection."

"The totalitarian system has left our country a bad heritage: an over-militarized economy and pollution over much of the European part of Russia, the Urals, and southern Siberia. Russia was also affected by the Chernobyl disaster. But at the same time over 50 percent of Russian territory still retains its virginally pure state. The purifying of polluted territories; a transition to new progressive ecological technologies in industrial regions; and the preservation of the virgin forests, lakes, and rivers of Siberia, Altay, the Sayan mountains, and the Far East are two indivisible parts of Russia's ecological policy."

"I wish the participants of the Ninth Globe International General Assembly successful work for the good of our planet's biosphere, and I wish them happiness and prosperity."

## BELARUS

### Waste Management, Storage in Minsk Deemed 'Critical'

WS0609113694 Minsk VECHERNIY MINSK  
in Russian 31 Aug 94 p 2

[Report by Boris Zalesskiy: "The Capital Faces Danger of Being Buried Under Waste"]

[Text] According to experts from the Minsk City Committee for Natural Resources and Environmental Protection, the situation regarding waste treatment in the

Belarusian capital is critical. Unless urgent measures are taken in the immediate future, the situation could result in very unpredictable sanitary and environmental conditions, as well as an increased risk of fire.

Let us look at some figures. Last year alone, industrial enterprises accumulated some 376,000 tonnes of waste, including 35 tonnes of first-degree toxic waste, 2,859 tonnes of second-degree toxic waste, and 10,192 tonnes of third-degree toxic waste. According to expert predictions, the amount of waste will exceed 5 million cubic meters by the year 2000.

Though the city has several enterprises handling the processing and treatment of solvents, galvanic sludge, and luminescent lamps, there are currently no enterprises to handle the neutralization and processing of radial tires, mercury-zinc batteries, and hydrated galvanic sludge. In addition, we lack timber waste processing technologies.

The most troublesome aspect of this situation, however, is the fact that for a long period of time, the issue of constructing industrial toxic waste dumps has not been resolved. The lack of such waste sites results in the deterioration of environmental conditions around large industrial enterprises in Minsk, because toxic substances are accumulated and stored at industrial sites and endanger not only the people who work there, but people living in surrounding areas as well.

It is no secret that due to the great number of industrial enterprises in Minsk, our soil is highly polluted, and surface and underground waters are poisoned with heavy metal salts which are especially typical of waste from the production of galvanic goods.

The construction of industrial toxic waste dumps has again been discussed this year. The nonbudget Fund for Environmental Protection has allocated some 120 million rubles for carrying out planning and survey operations within the framework of this construction program. The people, as well as the Minsk Sanitary Office, however, are deeply concerned with the fact that the authorities want to build this waste facility near the city.

## ESTONIA

### Environmental Issues: Cost, Damage, Future

WS0609071594 Tallinn Ministry of Foreign Affairs  
Press Release in English 1756 GMT 3 Sep 94

[Report from ESTONIA TODAY, compiled by the Information Division of Press and Information Department of the Estonian Ministry of Foreign Affairs—received via Internet E-LIST]

[Text]

### ENVIRONMENTAL ISSUES

#### Environmental Damage From the Soviet-Russian Military Occupation

Fifty years of Soviet-Russian military bases in Estonia has taken its toll on Estonia's environment. From ground



water in some places so heavily polluted with dumped aircraft fuel that it is possible to set the earth on fire to radioactive slurry ponds meters from the Baltic Sea, the cost of the Soviet Russian occupation will be borne by Estonia for many years to come. Recent information from the Ministry of the Environment has put the cost of cleaning up the mess left by the Russian troops at 54,752,697,000 Estonian kroons (over 4 thousand million US dollars).

The Soviet military controlled close to two per cent of Estonia's territory on which were located 570 military installations of various types and sizes and most of which have environmental degradation of various forms.

Estonia realises that the repair and restoration of the environment affected by the Soviet occupation will take many decades, but is a task necessary to contribute to the quality of life not just in Estonia, but in the entire Baltic Sea region.

With the withdrawal of Soviet-Russian forces from Estonia, decades-long concerns and fears over the environmental degradation caused by the carelessness and years of neglect by the occupation forces have been unfortunately realised. Estonia was heavily militarised with close to two per cent of its territory under the direct control of the Soviet military command.

Although the numbers have been hard to determine, it has been estimated that approximately 132,000 Soviet troops (one third of the number in Eastern Germany) were based in Estonia—a country of only 1.5 million people. These troops served in a myriad of units that ranged from the strategic nuclear bomber bases to mechanised infantry assault units, to frontier guards who ensured that the local population did not escape.

With the collapse of the Soviet Union and the restoration of Estonia's independence, Estonia began talks with Russia for the removal of the Soviet, now Russian, forces in Estonia.

At the beginning of the negotiations in 1992, over 500 various military bases and adjacent territories were under the jurisdiction of the Russian military command. The total area of this territory was 85,175 hectares, or approximately two per cent of the territory of the Republic of Estonia.

Environmental and ecological damage has been effected on all the territory that was under the jurisdiction of the Soviet and Russian military forces.

#### PRIMARY SOURCES OF ENVIRONMENTAL DAMAGE

1. The absorption of heavy fuel oil and other fuels into the ground and the ground water is one of the primary sources of environmental pollution. Ground water is the main source of clean water for domestic purposes across in Estonia.

The damage is extensive. For example, an area of approximately sixteen square kilometres at Tapa airport

and its surrounding area has been contaminated by dumped fuel to a depth of two to eight meters. Much of the fuel was dumped by pilots in order to falsify flight records.

At Amari airport the soil and ground water over 20 hectares has been heavily contaminated to a depth of up to four meters.

Soil and ground water contamination is endemic at Soviet military air bases. However, wherever fuels were handled, spillage and pollution occurred. Approximately 45 hectares near the Sillamae (Karkna) fuel storage area has been contaminated to a depth of up to four meters. The fuel storage area at Randvere has three destroyed fuel tanks and associated contamination which covers over 12 hectares.

The soil and ground water surrounding the heating boilers of the Paldiski garrison has been contaminated by heavy fuel oil. Smaller amounts of contamination have been noted at many other territories.

2. Radioactive waste storage areas at the Sillamae uranium enrichment plant and the Paldiski nuclear reactors are the main environmental concerns. The slurry ponds at Sillamae are located on the shore of the Baltic Sea.

3. Rocket fuel storage areas. The storage areas at Orikula, Udriku, Pahkla, Keila-Joa and Randalu on inspection show careless handling of poisonous fuel components. For instance, poisonous residue fuel and oxidisers have remained in tanks or have been poured on the ground.

4. Sea mine and ammunition depots, and explosives dumped on the sea bottom. There were many explosives on the islands of Naissaar, Paljassaar, and the former depots of Manniku and Astangu, which due to technical problems, were not removed and were destroyed on location.

5. The presence of many chemicals and poisons on the territories of the military are a distinct problem, as well as the dump sites of poisonous chemicals within Estonian territorial waters.

6. Pollution of the ground, and ground water, with organic waste and excrement. This type of pollution is particularly evident in and around auxiliary military units.

#### ESTONIA'S RESPONSE

The primary difficulty faced by Estonian authorities was that access to the territories was granted only after the Russian troops had departed. This has delayed the implementation of procedures that would ensure the control and the limiting of pollution. In spite of this, Estonian environmental experts have succeeded in determining the quantitative and qualitative characteristics of the contamination and at many of the areas controlled by the Russian military. Work has also begun to limit any further contamination and harm to the environment, and to complete a thorough review of the damage at the Soviet-Russian bases.

The Ministry of the Environment formed a Working Group which has analysed 85 per cent of the territory held by the Soviet military.

The Estonian and Russian Presidents have also signed an agreement (July 1994) for the withdrawal of the Russian Federation's troops in which the Russian side

agreed to follow several basic procedures to reduce the environmental damage during the withdrawal of its troops.

#### COSTING THE DAMAGE

The following table shows the costs associated with the various military objects in Estonia.

Environmental					
Area	Groundwater	Soil	Surface Water	Manmade Environment	Total (EEK)
Air field/bases	4,679,781	3,887,581	102,120	467,874	9,137,356
Rocket bases	10,000	249,154	1,500	40,952	301,606
Explosives storage		11,488		119,284	99,772
Chemical storage		3,139		302	3,441
Fuel storage		128,733	27,000	39,220	194,953
Supply depots		357		12,650	13,007
Port facilities		47,714	450	24,852	73,016
Artillery ranges	10,000	1,140,263	1,300	993,273	2,144,836
Communication and radio bases	3,000	247,326	300	29,590	280,216
Bases and border guard posts	3,000	1,136	5,000	74,157	83,293
Paldiski					40,000,000
Sillamae					1,700,000
Other	6,000	473,816	330	139,221	166,289
TOTAL	4,721,781	5,865,346	181,000	2,284,570	54,752,697

Source: Estonian Ministry of the Environment (August 1994) [numbers as received]

The Working Group estimates the cost of repairing the damage to the Estonian environment at 54,752,697,000 EEK [expansion unknown] (over 4 thousand million US dollars). In addition to this, the loss of income to Estonia and non payment of environmental fines adds another 4.4 thousand million EEK, for a grand total of 58.95 thousand million EEK.

The highest costs are connected to the clean-up of former Soviet military airfields and artillery ranges (over 11 thousand million kroons) and two areas involving radioactivity, the Paldiski nuclear submarine training facility (40 thousand million kroons) and the town of Sillamae, with accumulated radioactive waste from a uranium plant (1.7 thousand million kroons).

To date (August 1994) the Working Group study has cost Estonia 9.8 million kroons.

#### THE FUTURE

The Estonian Government realises that the clean up work is not a short term project and that the work will be on-going for several decades. However, costing the damages and the completion of a thorough review of the environmental problems associated with the Soviet-Russian military occupation, allows for the planning and developing of strategies to contain further degradation of

Estonia's environment. This is especially important in those areas that affect the provision of basic services, such as clean water for household use.

The environmental task ahead is not small and Estonia welcomes the support already received from other countries such as Denmark, Sweden and the United States, in overcoming another aspect of the legacy of Soviet occupation.

#### Minister Details Environmental Damage by Russian Troops

WS0109115194 Tallinn ETA in English 0929 GMT  
1 Sep 94

["News Release"]

[Text] Soviet/Russian troops have caused Estonian environment damages totalling 58.95 billion Estonian kroons (\$4.75 billion), the Estonian Environment Minister Andres Tarand told a news conference on Monday.

One fourth of the damages were caused by fuel that has penetrated into soil and subsoil water, Tarand said. Thus far, Russia has paid no country any damages caused by the Soviet military and, consequently, Estonia has no big hopes to receive compensation, Tarand said adding that negotiations on that issue should still be held.

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Work at estimating and neutralizing damages caused by the foreign troops has been going on for over two years, but there have been interruptions as quite recently the military bases were partly under Russian control, Tarand said.

The government has allocated 10 million kroons over the two years to the work which has been mainly spent on estimating the damages, the minister said.

Work at removing aircraft fuel from subsoil water have been started at Tapa, the location of a former major military airport. Works have progressed already to its third stage and should be completed by next spring, Harri Liiv, a head of department, said.

The work has been financed by Denmark which has granted 5.25 million Danish crowns for that purpose. Estonia has financed work done by Estonian companies. Plans have been made to build a system for purifying oil-contaminated water and building a system of fuel repositories which altogether would cost 2.2 million Estonian kroons.

According to Liiv, water has been contaminated on eleven square kilometers and is covered with petroleum on six square kilometers. Around 3,000 residents suffer under the contamination. Now, petrol is being pumped out and is to be used as fuel.

Jaak Saar from the ministry said constant observation was being carried out in Paldiski with samples taken from the air and sewerage every day.

## KAZAKHSTAN

### Nazarbayev on Efforts To Save Aral Sea

LD0609185494 Moscow INTERFAX in English  
1410 GMT 6 Sep 94

[Text] The problems of the Aral Sea and the adjacent regions should be discussed at the meeting by Central Asian heads of state during the CIS summit scheduled for October 9 in Moscow, believes Kazakhstan's President Nursultan Nazarbayev.

Nazarbayev addressed on Tuesday a session of the board of directors of the International Foundation to Save the Aral Sea, of which he is chairman. He said that the world community is very concerned about the Aral Sea problem, which, he believes, is a world problem.

Nazarbayev said he has applied for help to the heads of 32 foreign states and to international financial organizations. Donor-countries of the World Bank, at their conference in Paris, set aside \$40 million to finance the first part of the program for saving the Aral Sea.

Nazarbayev believes that by the time the program is fulfilled, the sum of the aid will have reached \$220 million. He also said that the Central Asian countries, founders of the international foundation, should be first to take concrete measure to save the Aral Sea.

### Former Nuclear Test Sites Potential Source of Revenues

94WN0389A Moscow NEZAVISIMAYA GAZETA  
in Russian 19 Aug 94 p 3

[Article by Andrey Vaganov: "Nuclear Test Sites—an Element of Mankind's Biography; They Can Generate Profits Even When They Are Inactive"]

[Text] A special IAEA mission was working on the territory of the Semipalatinsk nuclear test site and in nearby populated communities at the end of July at Kazakhstan's request. It was made up of highly qualified experts: Peter Stegnar (Slovakia—the head of the mission); Jerome La Rossa, Peter Shebel, and Adam Hutter (all from the United States); psychologist Anthony Erickson from Great Britain and his countryman Peter Shaw; and French experts Christian Chenault and Daniel G. Robeau. Russia was represented by Professor Anatoliy Matushchenko, an expert from the Russian Federation Ministry of Atomic Energy, and by IAEA staffer from the Russian Federation Igor Kuleshov. The mission was assisted in its work by representatives of the Atomic Energy Agency of the Republic of Kazakhstan, the National Nuclear Center of the Republic of Kazakhstan, and the radiation safety service of the test site.

The mission conducted comprehensive tests of samples taken from the populated communities of Dolon, Budene, Sarzhal, Kaynar, and Ayaguz and some control points directly on the test site. In particular, the IAEA mission tested the personal radiation dosimeters that had been distributed to the local population back in November 1993. The data are now being processed in Vienna, and the results might be reported at an international seminar scheduled for 5-10 September in Barnaul (Altay Kray). This seminar, incidentally, will be held as part of Project RADTEST ("Radiation on Test Sites").

The members of the IAEA mission were particularly intrigued by the exotic Lake Chegan—the first artificial reservoir in the world to be created by nuclear technology on 15 January 1965. An underground nuclear explosion with a force of 140 kilotons formed a crater up to 100 meters deep in some places. The members of the IAEA mission happily took a dip in this Atom-Kule (the local population's name for the "Atomic Lake"). The radiation background on the bank was 4-8 milliroentgens per hour.

At one time everyone acknowledged that the Soviet Union was the leader in the use of nuclear technology for peaceful purposes. Another unique object on the grounds of the Semipalatinsk nuclear test site is an indication of this: Project "Telkem-2" was an experiment in the excavation of canals. The results of the explosion of three nuclear devices with a force of up to 0.2 kilotons were supposed to be used later for the Pechora-Koldinskiy Canal (to send more water to the Caspian Sea).

During the final stage of the mission's work, the results were reviewed by IAEA Director General Hans Blix. In



particular, he visited the test range on the site where the USSR's first atomic device was tested on 29 August 1949. In the words of the director, all of this is an element of mankind's biography and must be acknowledged.

The pointed criticism of the site by environmental organizations in Kazakhstan, however, is no secret. They constantly demand colossal allocations for the elimination of the negative ecological effects of the use of the test site. One of the main objectives of the IAEA mission was the determination of the actual state of the environment today. In any case, however, turning the site into a museum would be a sounder option—from the ecological and economic standpoints—than razing it. In fact, it could become an important source of revenue. The Western press, for example, has already mentioned the possibility of the inclusion of the nuclear complex in Alamagordo in the National Register of Historical Landmarks. That is where the first U.S. nuclear bombs were tested as part of the Manhattan Project, and these tests were officially described as "a major scientific breakthrough of historic impact." Now the United States wants to include the Alamagordo complex in the international convention on the protection of the international heritage. This could be a source of economic advantage as well as prestige.

#### **Radiation Decontamination Plan Outlined**

94WN0391A *Almaty SOVETY KAZAKHSTANA*  
in Russian 24 Aug 94 p 2

[Article by Viktor Slavgorodskiy, chief of the radioecological administration of the Ministry of Ecology and Bioresources (Almaty): "Radioecology: There Is a Program—There Is No Money"]

[Text] The consequences of high technologies, nuclear explosions, and ecologically harmful productions are taking their toll: Ever denser radiation is hovering over our civilization. Monitoring of its level and concern for people's health and the normal condition of the environment—these are the problems handled by the Ministry of Ecology and Bioresources.

As early as 1991 the Cabinet of Ministers approved the concept of the republic system for radiation ecology. It envisions the study of the radiation situation throughout the entire territory of the republic, warning of pollution, and solutions to problems of burying radioactive wastes. A considerable amount of work has already been done during the past two years.

It has been determined that at the former Semipalatinsk nuclear proving ground there were 26 ground, 90 air, and 364 underground nuclear explosions. Living under the radioactive clouds—which have caused an individual dose of radiation of more than 4 rem throughout the entire period during which the proving ground has been in operation—are more than 824,00 people in 253 population points located in Semipalatinsk, Karaganda, and

East Kazakhstan Oblasts (the permissible sanitary dose of radiation for the population is 0.1 rem per person per year).

On 88 percent of the territory of the proving ground itself, the radiation situation has been evaluated as not exceeding the sanitary norms, and 12 percent of the territory requires temporary quarantine until it is decontaminated. Naturally, on the latter not only is habitation prohibited but agricultural work must be prohibited as well.

Additionally, methane is leaking from the mouths of certain experimental wells. When it burns, an explosion on the surface is possible, as was the case with the Glubokaya well.

Data sheets were drawn up for the sites of individual explosions (25 sites, 32 explosions). At the present time only on the territory of the experimental field inside the area of the Azgir massif is the radiation situation unsatisfactory. After completion of the study, a number of sites will be taken out of use, or certain restrictions will be placed on them.

On an area of 570,000 square kilometers inside the Semipalatinsk ecological disaster zone and also in West Kazakhstan and Atyrau Oblasts the radiation situation was studied by aerial methods. Local sections of radiation pollution have been established, and their substance composition indicates the possibility of the environment having been impacted by the Chernobyl disaster, global fallout, and, especially in East Kazakhstan Oblast, technology-generated processes.

A radiohydrotoxicological photograph was made of an area of 250,000 square kilometers. In East Kazakhstan, Pavlodar, and Kokshetau Oblasts it made it possible to single out nine anomalous zones with concentrations of cesium-137 of more than 0.07 curies per square kilometer. Of the nonradioactive pollutants within the confines of Zhambylskiy, Leninskiy, Moskovskiy, and Sergeyevskiy Rayons in North Kazakhstan Oblast on an area of a thousand square meters an anomaly was found with two to three times the maximum permissible concentration of polychlorobiphenyls. In Semipalatinsk and Taldykorgan Oblasts they have registered large areas of pollution of the surface waters with selenium, mercury, and fluorine caused by natural factors.

Work to reveal radiation pollution immediately in the zone inhabited by people and in industrial centers is continuing. In 1993 alone, 98 radioactive anomalies were discovered, of which 54 were caused by technology-generated pollution.

The radioactive pollution that was discovered was deactivated or localized through the efforts of local sanitary-epidemiological services or civil defense.

A considerable amount of work has been done to solve the problem of burying and storing radioactive wastes. First of all, they have been studied and classified. A catalog has been compiled and a concept of a burial

system has been developed. Searches are being conducted for possible location of storage sites for radioactive wastes (RAO) in the Mangistauskiy industrial region. The possibilities of using as storage facilities the spent mines of the third mining administration of the Tselinnyy Mining-Chemical Combine have been analyzed. The first stage has been completed in gathering initial information on the Degelen massif at the Semipalatinsk Proving Ground for drawing up technical and economic substantiation for the planning of a storage facility. A working plan has been drawn up for reconstruction of the Baykal-1 test complex for temporary storage of closed sources of ionizing radiation.

A large amount of work has been done, but because of the inadequate financing, problems of radioecology are not being solved as quickly as we would like. For example, in 1993, when the need for funds for radioecology amounted to R588 million, R518 million was allotted. Including for solving the problem of burying radioactive waste—R35 million, as compared to the planned R127 million. A similar situation has developed this year: Instead of 19.7 million tenge, 2.4 million was allotted, and even that amount had not been deposited into the account of the Ministry of Ecology and Bioresources as of the beginning of the year. There are no funds for conducting scientific research work either. With this kind of financing, one cannot expect a reduction of strain in the republic's radiation situation.

The Ministry of Ecology and Bioresources is prepared to consider any business proposals contributing to improvement of the radiation situation in the republic.

### KYRGYSTAN

#### Funding Approved for Aral Sea Protection Fund

LD0309085194 Bishkek Kyrgyz Radio First Program Network in Kyrgyz 2300 GMT 2 Sep 94

[Text] As is known, at the beginning of the year, the heads of the Central Asian states decided to raise money for the international "Save the Aral Sea" fund. The government of the Kyrgyz Republic adopted a resolution on the issue. In accordance with the resolution, the Ministry of Finance has been instructed to allocate an initial fee equalling one percent of the 1992 national income to the account of the fund's executive directors. Besides, the Water Resources Ministry together with the State Committee of Environmental Protection should set up a Bishkek-based branch of the "Save the Aral Sea" fund and work out a program of concrete measures aimed at improving the environmental situation in the Aral Sea basin in 1994-98.

### LATVIA

#### Lack of Set Strategy To Handle Baltic Sea Spills Viewed

WS2908074294 Riga DIENA in Latvian 22 Aug 94 p 1

[Report by Liga Laizane: "Latvia Does Not Have Strategy for Dealing With Oil Catastrophes"]

[Excerpt] Riga, 16 Aug—Although Latvia has joined the Helsinki Convention on Baltic Sea Protection, which obliges every country to clean up any spill of oil or other poisonous substance in the Baltic sea, the Latvian Emergency Service is not presently prepared to fulfil this task because they lack a strategy to deal with such accidents. For example, the Emergency Coordination Center and the equipment for collecting the oil belong to one state institution, while the ships on which the equipment could be installed—to another.

During a conversation with Andris Bernans, director of the Sea Catastrophes and Emergency Service in the Latvian Transport Ministry, DIENA learned that as it was done in the past, following the order set in the former USSR, the task of dealing with oil spills was charged to the Sea Catastrophes and Emergency Service. In all other Baltic states this duty is performed by institutions which are responsible for environmental protection, but the main task of the Emergency Service is to save stranded people and ships in emergency situations. In the Soviet era, the respective services had at their disposal a ship called "Svetlomor" on which the equipment could be installed. Currently, the equipment for collecting oil belongs to the Ventspils Emergency Service. They also have a specially trained group of people who could work with it, but they do not have ships on which to install the equipment. According to Bernans, it will not be possible to purchase a special ship for them because it would be too costly. Besides, it would be senseless, since there are already such ships in Latvia. The problem is that they belong to the Ministry of Environmental Protection and Regional Development.

As Bernans and Sea Inspectorate Chief Guntis Drunka told DIENA, there has much discussion on the strategy for effectively dealing with spills of oil and other poisonous substances, but the strategy has not yet been worked out. [passage omitted]

### MOLDOVA

#### Experts Foresee Most Serious Impact of Floods on Economy

AU0509202794 Chisinau BASAPRESS in English 1956 GMT 2 Sep 94

["Economic commentary: Moldovan Economy and Impact of Natural Disaster"—BASAPRESS headline]

[Text] Chisinau BASAPRESS, Sep 9—The natural disaster which affected Moldova this spring and summer will have the most serious impact on the economy. The burden of new expenses will press heavy on the deficit budget of millions of lei. Experts from the Finance Ministry recently assessed that the damage suffered by Moldova as a result of the disasters represents the annual government expenditures. Ion Ciubuc, vice minister of economics, stated during a meeting with representatives of the foreign embassies in Chisinau that the material damage caused by the disasters in spring and August

11-12 and 26-27 stands at 1 billion lei (\$250 million). The ongoing drought caused significant damage to harvest which was evaluated at 569 million lei and the storm on August 11-12 damages exceeding 99 million lei. The damage brought about by the August 26-27 torrential rains was evaluated at 359 million lei. Obviously without a considerable financial injection the consequences of the disasters will be hardly eliminated. The foreign humanitarian aid cover only a part of the need for financial means. Government representatives point out that changes should be made to the state budget and new exceptional measures should be undertaken in the financial field. On the other hand, Alexei Cemartan, prime vice minister of finance, stated that "no change will be made to the expenditures for enterprises and institutions financed from the budget, and in particular to the social programs and salaries." Banking representatives say that the accounts of the state enterprises will not be frozen though the government bears large expenses due to the natural disasters. Iurie Pailic, from the National Bank, mentioned that the Moldovan leu's exchange rate could decrease if the government grants credits to deal with the consequences of the disaster. Anyway, the Moldovan Government's hopes to stabilize the economy this year become unachievable. And even its hopes to make economy operate at its full capacity with the help of foreign assistance are vanished. The damage caused by the disaster represents 60 percent of all foreign credits or according to certain preliminary calculations, over 40 percent of the gross domestic product.

## UKRAINE

### Scientist Reports Americium-241, 242 Found Around Chernobyl

AU3008134294 Kiev DEMOKRATYCHNA UKRAYINA in Ukrainian 27 Aug 94 p 2

[Report by UKRINFORM correspondent Olena Alikhanyan: "Has Americium-241 Been 'Apprehended' at Chernobyl?"]

[Text] The statement by Valeriy Kopeykin, a professor from Kazan [capital of Tatarstan] to the effect that americium-241, a new radioactive element that is extremely dangerous to humans was found around the Chernobyl Atomic Electric Power Plant [AES] has alarmed the Ukrainian public. At the request of the UKRINFORM correspondent, Viktor Sedletskyy, president of the Ukrainian Association of Independent Scientists, and Yuriy Solomatin, expert of the Interdepartmental Commission for Radiation Control, commented on the situation.

According to Viktor Sedletskyy, americium-241, which has a half-life of about 430 years, is extremely toxic and causes mutations in living organisms. It is a product of plutonium decay, readily dissolves in water, and, for that reason, easily migrates. The element was not only found in the Chernobyl zone, but also in Kiev. The scientist is surprised that too much americium has been detected.

He explains this phenomenon by the inaccurate data on the balance of fuel ejected into the environment during the accident.

Information also appeared to the effect that scientists had also "apprehended" americium-242. This element only exists for 16 hours, but it has such a small critical mass that it may explode even in negligibly small quantities. Some specialists believe that the Chernobyl sarcophagus, which is protecting the world from the destroyed reactor, is cracking and falling to pieces precisely due to the microexplosions of americium-242, which accumulates at its walls.

Viktor Sedletskyy states the following: Even though the state of the sarcophagus had been threatening all along, the emergence of americium further exacerbates the situation. At what rate will it spread from the zone? Is an explosion at the Chernobyl AES possible? The scientist does not have answers to these questions, because this radioactive element has hardly been studied at all. It appears that even now nobody is going to study it for lack of funds.

Yuriy Solomatin called the reports on americium "artificial dissemination on a nationwide scale of genuine Chernobyl masochism." He believes that it is irresponsible to inflict an unjustified psychological trauma upon the people of Ukraine before the problem is investigated and proceeding from rumors. This, the scientist pointed out, is not simply a new spiral of radiophobia, as it may seem at first glance. Who needs this and who will be held responsible for this? the expert asks.

The opinion of the ordinary people who live in the contaminated zone and who are affected by it, like the present UKRINFORM correspondent considers himself to be, is as follows. If the life and health of people depend upon resolving a problem, the craziest hypotheses may be criticized, but they must also be verified. Only in that case one may be confident in the future of our young independent state and in the health of its people.

### Chernobyl Reactor Not To Shut Before 2005

AU0509164494 Vienna DER STANDARD in German 3-4 Sep 94 p 28

["jost"-attributed report on interview with Nur Nigmatullin, deputy chief of the Ukrainian State Committee for Nuclear Energy: "Chernobyl Not To Shut Before 2005"]

[Text] Kiev—If it will be possible to implement the program for extending nuclear technology in Ukraine according to plan and if the still unsolved technological problems are settled it will be possible to shut down the last block of the Chernobyl plant in the year 2005. Yet, it is of first priority for Ukraine to cover the enormous energy deficit. After all, this is why many enterprises are not fully operational at the moment, Nur Nigmatullin, deputy chief of the Ukrainian State Committee for Nuclear Energy, said in an interview with DER STANDARD.



The \$200 million that were promised by the G7 at their recent summit in Naples are only just enough to cover the technological costs for closing down the Chernobyl blocks. "But what will we do after that?"

Moreover, Nigmatullin says that the position of the West is inconsistent. "In St. Petersburg, a reactor that is identical with the Chernobyl type is currently being redeveloped with Western money, while they want to force us to shut down our reactor."

Moreover, promises for funding the completion of the still unfinished new blocks in Ukraine have remained vague. Nigmatullin: "So far we have financed everything ourselves. Three additional blocks are as good as finished, the sixth at Saporoskye on the Dnieper River could be put to the grid at the beginning of 1995." These VVER [water-moderated water-cooled power reactor] 1,000-type reactors are identical with the technology used in Temelin.

Ukraine has submitted an alternative proposal to the West. Two entirely new blocks should be built near Chernobyl with Western capital and know-how. These

could be completed in five to six years and then replace the old ones. One block could supply energy to the West, the other would supply electricity for Ukraine. "For us, this would be of great importance, because we could use our qualified personnel from Chernobyl. Otherwise, they would all be enticed away by Russia."

Yet, one grave problem that remains is the disposal of the leaden sarcophagus around the wrecked block of Chernobyl. This must take place simultaneously with the shutdown of the other blocks, but will be much more expensive. Nigmatullin puts the estimated costs of the operation at \$1 billion. Ukraine has proposed the founding of an international fund to finance this sensitive project.

Altogether, 14 reactor blocks are operating in Ukraine, 10 of which are of the VVER 1,000 type, two of the VVER 440 type, and the remaining two are the graphite reactors of Chernobyl. Nuclear energy currently covers about 30-35 percent of total demand. About 20 percent comes from Chernobyl.

## GERMANY

**Systems for Exhaust Gas From Small Plants Sought**

94WN0361G Duesseldorf VDI NACHRICHTEN  
in German No 28, 15 Jul 94 p 16

[Article by Ursula Schiele-Trauth: "Clean Emissions Also From Small Plants"]

[Text] Duesseldorf—Stack gas scrubbing has long been a classic environmental technology. But the common processes which deal with emissions from large facilities are usually unsuitable for smaller emitters. What is needed are systems which meet the special requirements of these enterprises.

While methods for stack gas scrubbing in large power plants are regarded as fully tested, emissions from smaller combustion facilities and industrial processes still create problems. "Most methods which reduce sulfur dioxide and nitrogen oxide in exhaust gases are conceived for plants which work under relatively constant conditions," Dr. Klaus Juettner from Dechema in Frankfurt recently stated at Achema. In large plants volume flows, temperatures and pollutant concentrations undergo only minor changes. But in most small combustion facilities, or for industrial processes such as surface treatment of metals through pickling, for roasting processes to extract metals or the production of nitric or sulfuric acid, these parameters vary greatly. Accordingly, expensive controls must be introduced into the systems. "The use of conventional methods is not only extremely uneconomical for smaller facilities," in Juettner's opinion, "but at the same time it harbors major environmental risks." For example, during catalytic denitrification of stack gases through injection of ammonia, in the case of an overdose ammonia can escape into the surrounding environment.

In order to remove sulfur dioxide from the stack gases at smaller plants, equipment-builder Caldyn from Ettlingen near Karlsruhe offers a waste water-free facility which needs only a small amount of lime. Conversion of the stack gases with lime removes both hydrochloric and hydrofluoric acid. They accumulate as salts in the resulting gypsum. With wet methods large amounts of lime slurry must be circulated in a tower for the desulfurization. Processing the bottom products from the washer is expensive. "For small plants the costs are not acceptable, and previous systems, which work without waste water, use a very large amount of lime and enormous operating costs," is the judgement of the head of Caldyn, Professor Jogindar Chawla, with respect to existing methods.

The Ettlingen equipment-maker's system works at two levels. In the first step, the concentration of sulfur dioxide in the raw gas is reduced in a spray absorber to about 400 mg per m<sup>3</sup>. The connected washers achieves values for the clean gas, which at less than 50 mg/m<sup>3</sup> of sulfur dioxide are clearly below the requirements of the

Technical Directive for Air. Hydrofluoric and hydrochloric acids can be nearly completely separated, and the dust content lies below 20 mg/m<sup>3</sup>.

As with some sort of counter-current principle, in the Caldyn process the fresh lime is not introduced until the second step, the washer. For the already cleaned gas this means an excess of lime above the actual need for the conversion. That is how the high degree of separation is achieved in this section. "Since the handling of lime slurry is very cost-intensive, we add water and dry lime separately to the system, and they do not mix until inside the facility," Chawla explains. Naturally, the bottom sediment accumulated in the washer still contains large amounts of unused lime. This is conducted to the initial step, the spray absorber. Using a low amount of energy, a specially developed nozzle here produces fine lime slurry droplets. The high pollutant content in the raw gases completely converts the lime in the drops, and the hot gases quickly cause the water to evaporate. The spent lime therefore accumulates in dry form and can be extracted in a suitable solid material separator. Above all, however, Chawla envisions a market for thermal afterburning of residual material from the chemical production. An initial facility is now under construction in an aluminum recycling plant.

In addition, electrochemical removal of pollutants from stack gases is also promising. "In this process electrons act as reaction partners and convert chlorine, sulfur dioxide or nitrogen oxides by means of reduction or oxidation into ecologically tolerable compounds," Juettner describes the principle for such methods, which Dechema in Frankfurt is helping to develop within the framework of a European Community project. In this process electric power replaces the continuous addition of chemicals; reaction products, such as gypsum in stack gas desulfurization, do not even occur.

**SO<sub>2</sub> Is Directly Converted Into Acid.**

In the simplest case, the exhaust gases are conducted into an absorption column, which simultaneously functions as an electrochemical cell. Electrically conducting particles here form a three-dimensional static-bed electrode with a large specific surface, in order to assure a high degree of turnover. In such reactors sulfur dioxide can be directly converted into 40-percent sulfuric acid with relatively low energy consumption. "To be sure, the end product is not quite clean," according to Juettner. It contains a little lead from the electrode, but the acid is usable for technical purposes or in lead accumulators.

In order to eliminate nitrogen oxides, an indirect electrochemical method is suitable. Here a substance described as a "redox mediator" converts nitrogen oxides into nitrogen and nitric compounds. Subsequently, the redox mediator is electrochemically regenerated in an external cycle.

Since many gases contain both sulfur dioxide and nitrogen oxides, purification methods which eliminate

both components are particularly desired. Such a simultaneous process, developed by Dechema, is now being tested under industrial conditions, together with enViro-cell in Oberursel as the industrial partner, in a glass-melting production in Spessart. The facility is initially planned for 150 m<sup>3</sup> an hour, but after expansion a capacity of 10,000 m<sup>3</sup> can be achieved.

In this simultaneous process, the pollutant gases first enter an absorption column where nitric oxide is reduced with dithionite as the redox mediator. The waste gas to be cleaned subsequently arrives in the anode compartment of a static-bed electrolyzer for oxidation of the sulfur dioxide into sulfuric acid. In the cathode compartment of the cell the redox mediator can then be regenerated from the desulfurization through reduction and added in a continuous cycle to the absorption column.

Juettner envisions the significant advantage of electrochemical methods to be in small units, for plants where only minor amounts of gas are generated. By coupling together several columns, it is possible to adapt to each particular set of conditions. This control is connected with low cost, because depending on the amounts generated it is enough to change the flow of power. Where there is no continuous need, the system can be switched on or off at any time.

#### **Combination Heat and Power Plant Replaces Old Plant**

94WN0361F Duesseldorf VDI NACHRICHTEN  
in German No 28, 15 Jul 94 p 15

[Article by AW: "Cogeneration Plant Replaces Old Plant"]

[Text] A thermal power plant with low pollutant emission and considerable efficiency for power generation at 50.3 percent is located in Halle on the Saale. As of recently, a facility operated with natural gas has replaced the obsolete thermal power plant based on lignite, which continues to operate alongside it until the end of 1994.

Mitteldeutsche Energieversorgung Halle (Meag) and Stadtwerke Halle GmbH have together built the thermal power plant, at a cost of 140 million German marks, in the Trotha city district in Halle. The project planning was handled by Vereinigte Elektrizitaetswerke Westfalen (VEW) in Dortmund, and a Munich firm of architects designed the facade in the Bauhaus style. The chimney brings forth "nothing but" little white clouds and no yellow smoke fumes. Neither dust nor sulfur dioxide escape, because natural gas is being used as primary energy.

To be sure, an estimated 400 tons of nitrogen oxides annually and, as in every combustion, carbon dioxide will still be blown into the air. But the emission values for these two aerial pollutants are kept within bounds in Halle through an ingenious gas turbine technique.

The facility works as a cogeneration plant: One gas and one steam turbine are combined with each other (gas and

steam principle). The gas turbine takes care of most of the power generation. The hot waste gases from it are used to produce steam for the steam turbine in a waste-heat boiler. This turbine once again delivers electric power, as well as heat for the district heating grid.

As the gas turbine the newest machine from the Siemens energy production division (KWU) was used, the V 64.3. According to factory information, it achieves a peak efficiency of 50.3 percent in power production. The natural gas is first blown into the two side combustion chambers of the turbine, mixed with purified and compressed air and then burned at more than 1,000 °C, whereby it drives the turbine blades. This axis in the turbine has the compressor, and the generator is coupled via a gear drive. The turbine has a stoking efficiency of 168 MW; the generator is designed for a power output of 58.6 percent. The power is fed into Meag's supply grid. The power company is the largest regional supplier in the new laender and supplies power to 1.7 million people.

The gas turbine delivers its waste gases at 530 °C temperature into the waste heat boiler, which produces the steam for the steam turbines, which in turn are coupled to a power generator. The resulting waste heat is again led into heat exchangers, where it heats water to 140 °C, which is then conveyed all the way to the individual households. Thus, 18,000 households are being supplied in Halle. But that does not exhaust the district heating capacities of the power plant. The operators are hoping for additional customers, primarily from the business sector.

At the Halle-Trotha thermal power plant the decision to use natural gas as primary energy was made for the reason, among others, that the lignite which is mined in the nearby region cannot yet be burned in an ecological and low-polluting manner. This will soon change. With the financial support of the Federal Research Ministry, Meag is planning a thermal power plant to supply the industrial park on the site of Chemie AG Bitterfeld in Wolfen. The facility is to have a special fluidized bed combustion which still requires development work, however. Meag is working out a scientific follow-up program for this, in which academic and research institutions will participate.

#### **Means of Recycling Construction Debris Proposed**

94WN0361E Duesseldorf VDI-NACHRICHTEN  
in German No 28, 15 Jul 94 p 13

[Article by Martin Boeckh: "Much Too Good for the Dump;" first paragraph is VDI-N introduction]

[Text] Gaiberg—Ten to twenty percent of the primary materials can be saved by reprocessing construction materials—this is the result arrived at by the "Recycling of Construction Material" study published in May by the Stuttgart engineering firm of Leonhardt, Andrae & Partner, carried out at the behest of the land of Baden-Wuerttemberg. What is missing are sufficient recycling



capacities, suitable separation techniques and the appropriate consumers for the prepared construction materials. A project in the northern Black Forest has proved that careful breakdown is sensible from economic aspects as well.

If you look more carefully at the Federal German garbage dump, it is not household or industrial waste, for example, that makes the dumps overflow but so-called construction debris. This includes excavated soil material such as rock, gravel, clay, topsoil or sand; further, construction waste such as concrete, bricks, sandstone or tiles as well as construction site waste, including wood, insulating materials, installation materials and glues. Broken-up road material is also part of the construction residue. Just how much of each category actually accumulates is something no one can say.

This surprising reply is what you are confronted with at the Federal Statistical Office, which describes the area of waste data as an "immense gray zone" and "an extremely dubious issue," according to Peter Roemer.

While in the literature it is possible to read about well over 400 million tons of accumulated waste annually, according to official surveys by the Federal Statistical Office in 1990 it was only 291.6 million tons in all of Germany. As part of this, the waste products from industrial production, including the 9.1 million tons of special waste, amounted to as much as 43.1 million tons. The overburden from mining amounts to 79.9 million tons; household waste, on the other hand, had a share of only 43.3 million tons, and for dried sewage sludge it was 4.9 million tons. The lion's share, however, was for construction waste with 120.4 million tons. The exact composition of this is again the subject of rough estimates. Three-fourths are presumably excavated soil, and the rest evenly distributed between construction debris, broken-up road material and construction site wastes.

The reason for the statistical shortcomings, according to Peter Roemer, is founded in the fact that "for all production and construction site waste the only data which need to be used are for firms with more than 20 employees." Since precisely in the private construction business it is primarily small enterprises which are involved, "just a little over 70 percent of the waste quantities actually accumulating need to be included," Roemer has to admit.

Of the resulting construction debris, at this time an estimated 15 percent are reprocessed in a different place. A study undertaken by the Stuttgart engineering firm of Leonhardt, Andrae & Partner, at the request of the Baden-Württemberg Environment Ministry, reached the result, however, that with consistent utilization of the recycling possibilities another 50 percent of the construction debris could be returned to the materials cycle.

"Here between 10 and 20 percent of the primary materials can be saved by returning the construction materials," says Thomas Wickbold, coauthor of the "Recycling of Construction Material" study. An argument in favor

of this is not just saving the scarce dumping capacities, but also the fact that up to 93 percent of the energy needed for producing and transporting primary construction materials could be saved by using secondary raw materials. "Furthermore, distinctly fewer environmentally hazardous byproducts are created by using a cycle," according to Wickbold.

That is also why the new Waste Law (AbfG) gives clear priority to waste avoidance and recycling over waste removal. In the law the Federal Environment Ministry sets recycling goals for the first half of the 1990s of 40 percent for construction waste, 60 percent for construction debris, 70 percent for excavated soil material and 90 percent for broken-up road surface.

"Reprocessing and recycling of excavated soil and road debris has been solved both theoretically and practically," it says in the study. Thus, veritable "excavated soil exchanges" have already formed in larger communities and rural municipalities, at which one may contribute or ask for excavated soil free of charge. The fact that in contrast to this the recycling of construction debris is still in its infancy, has several reasons. "Primarily regarding producers and consumers of construction material we still have a great deal of work to do to convince them," says Thomas Wickbold. "Almost everything can be separated at the construction site, but it is difficult to find enough consumers for the material within a reachable distance." All too often recycling is unprofitable because the transportation costs are too high. Furthermore, some producers of construction materials still do not find themselves capable of processing dirty construction material.

If construction debris is to be recycled, then it is usually as backfill, as a wall to protect against noise or underfill in roadbuilding. "The material is really too good for that," they say at the Stuttgart engineering bureau. Experts instead see application possibilities with a higher value: as a secondary mineral construction material, for example replacing gravel in concrete production. "PVC window frames should again become PVC window frames, and non-load-bearing wood beams can be reused as such, without making particle board out of them," it is said in the study.

While the recycling of minerals functions at least theoretically, for synthetics there are still considerable difficulties. Carbonizing PVC-containing cable pieces is often connected with problematic pollutant emissions.

The problems of recycling foamed polystyrenes, which are used in practically every new construction both inside and outside, have also been only partially solved. They are best known by the BASF product names of Styropor and Styrodur. BASF makes the base product polystyrene, which is further processed by other companies into expanded plastic sheets.

These companies do take back Styropor, and BASF returns the remelted polystyrene into its production or

gives it to the construction industry to produce lightweight concrete, hollow building blocks or Poroton bricks. In Germany there are now said to be more than 1,000 collection points for Styropor, but the material that arrives here comes mainly from the packaging sector and must be correspondingly clean.

Styropor sheets with glue and mortar attached cannot be recycled at this time. "For Styrodur as well we are thinking about recycling, but for that the material would have to be delivered clean, and, second, the quantities are simply too small right now," says BASF spokesman Dr. Ulrich Wriede.

The fact that selective reverse production, in other words careful disassembly, can be sensible not only from environmental but also from economic aspects, was proved by the research project Selective Disassembly and Recycling of the Post Hotel in Dobel, Calw county.

The Environment Ministry in Stuttgart and the German-French Institute for Environment Research of the University of Karlsruhe scientifically followed the entire demolition of a hotel in the small community of Dobel in the northern Black Forest from planning to the recycling. "With the gradual disassembly we were able to reuse about 95 percent of all the materials," explained Peter Goossens, press spokesman for the Environment Ministry. This was achieved exclusively through strict material separation right on the site.

Thanks to the type purity achieved, high-quality reapplication in the form of secondary raw materials in building construction and civil engineering was possible—which had a positive effect on the cost calculation of the disassembly. Despite the longer period of time, the 130,000 German marks in demolition costs ended up being about 20 percent lower than for a conventional demolition.

#### **Industry Breakthrough in Polyurethane Recycling Announced**

94W N0361D Dusseldorf VDI NACHRICHTEN  
in German No. 28, 15 Jul p 11

[Article by Juergen Siebenlist: "Industrial Breakthrough for PUR Recycling;" first paragraph is VDI-N introduction]

[Excerpts] Bludenz—Recycling of polyurethane (PUR) has taken another important step: While cross-linked polymers, such as most PUR materials, have so far been regarded as difficult to recycle, Austrian Getzner Chemie has now helped turn glycolysis of PUR into an industrial breakthrough. With its recently opened facility for chemical recycling of production residue, the enterprise now has a recycling capacity of 1.5 tons/work shift.

Getzner Chemie in Bludenz/Austria recently [text omitted] a new type of plant for chemical recycling of polyurethane (PUR) in [text omitted]

The production of insulating elements from the elastomer materials Sylomer and Sylodyn—they serve predominantly to protect against shaking, vibrations and noise—did not release any environmentally dubious liquid or gaseous residues such as occurred in the production of synthetic leather products practiced in Bludenz until 1980. The production method needs only a small amount of electric power (the reaction of the initial components is an exothermic process), which, furthermore, is produced in the immediate vicinity through hydroelectric power. And, finally, the recycling plant now taken into operation reduces the solid waste to a minimum. "Down to a filtered residue," supplements Naber, "the method runs practically without leaving any waste."

But until the recycling concept met the necessary industrial state of technology, to which Elastogran GmbH, Lemförde, also contributed application-technological support, a number of problems had to be solved, according to Bernhard Naber. Among them the polyurethane recycling experts from Schwarzheide counts primarily the elimination of the amines which form during the glycolysis of PUR and which must be classified as carcinogenic, according to the Hazardous Material Ordinance V, supplement II.

"We found out that deamination is successful through a chemical conversion of the amines." The method is based on products available on a large-scale industrial basis from epoxy-resin chemistry. The reaction products are well soluble in glycolysate and: "In this reaction compounds are generated which in conversion with the isocyanates to PUR become an integral component of the polymer skeleton," according to the chemist. The result is a recyclate with uniform properties, which, with a residual amine content of less than 0.1 percent, does not fall under the regulations mentioned above.

The production of elastomers with recycled polyols is only possible by mixing in fresh polyols, according to diplomat engineer Martin Dietrich. The expert for chemical development at Getzner says that the reason for is the high technical demands on the end product. They permitted only a maximum ratio of 25 percent recycled polyol. For quality reasons, however, the greater part of the products made in Bludenz were produced using a recycled material ratio of only 10 percent. With this ratio, according to Dietrich, the static and dynamic material data remain almost unchanged. Only the tensile strength and breaking elongation showed decreases in the range of 30 percent. Due to their minor relevance in the property profile of the end products, however, this change can be accepted.

According to Dr. Kohler, the recycled raw materials at Getzner can only be used in black-colored products at this time, because the produced color palette is very important for distinguishing the various insulating elements, in order to assure controlled use of the products at construction sites.

With the limited need for recycled material in its own production, the glycolysis plant in Bludenz, which operates on an intermittent schedule, still has not reached the limit of its capacity of about 1.5 tons per filling and work shift. For that reason Getzner Chemie is operating the PUR recycling plant—a prototype, conceived on the basis of laboratory experience with a technical institute facility with a capacity of 30 kilos—at only half capacity for reprocessing the in-house production residue, according to information by the business manager. The other half of the operating time it serves as an experimental facility for further industrial development of the process.

### Study Says Only Laws Enforce Environmental Protection

94WN0361C Duesseldorf VDI NACHRICHTEN  
in German No 28, 15 Jul 94 p 4

[Article by Stefan Willeke: "Laws Help Environmental Protection Get Started;" first paragraph is VDI-N introduction]

[Text] Bochum—Despite all the declarations in favor of the environment: It is still primarily legislation which creates the most progress for environmental protection in business and industry. This is the sobering result arrived at by a current study from Bochum.

In a detailed study, initiated by Innosys-Gesellschaft fuer Innovative Arbeitssysteme mbH in Bochum together with the Essen consulting firm of ORG Consult at the end of 1993 and evaluated in June, 935 German companies of the most varying sizes and industries were asked about their experiences.

Among the decisive reasons for increasing environmental protection in business and industry, the legal standards ranked in first place: 85 percent of the companies asked mentioned this point. After that follow economic reasons (about 55 percent) and business policy decisions (51 percent).

In the Bochum study, headed by Professor Herbert Schnauber who is a work system planner, it also turns out that voluntary measures to improve environmental protection in business and industry at this time are only rarely initiated. Nevertheless, the changes in the mentality of the company's executives are still tending in a positive direction. Project leader Gerrit Kiesgen calls it a "maturing process," and 95 percent of the companies interviewed indicate that they have begun measures to protect the environment. It is also informative that only one out of five firms believes that environmentally oriented activity would be valued by the customers.

Kiesgen also believes that the prevalent distribution of environmental protection measures in the companies is "short-sighted." Production often stands out (33 percent), primarily because of legal mandates. In waste disposal (27 percent) economic reasons play a major role due to the rising costs and fees. The areas of procurement

(12 percent) and research and development (7 percent) are of only marginal interest for environmental protection—even though "an enormous potential lies unexploited there" (Kiesgen).

Environmental protection is also very differently organized in the companies. There is still a long way to go to a relatively uniform model, such as in the quality field. As a trend the following conclusion may be drawn: The bigger a company is, the more heavily the environmental protection measures are distributed to divisions or working groups below the uppermost leadership level.

However, 80 percent of the firms have already got an employee in charge of environmental protection. But only in the chemical industry is the majority of ecologists employed at the main office. Stefan Krings, responsible for environmental management at Agiplan-Umweltconsulting GmbH in Muelheim, sees a "conflict" here. Many of these experts, according to Krings, "think too much about technical facilities instead of perceiving this subject as an integrated management task." The usual practice of simultaneously making the safety engineer the ecologist as well, promotes this trend.

As the Bochum study makes clear, a number of modern environmental protection instruments are only vaguely known in the firms. The answers from enterprises with fewer than 1,000 employees were particularly telling. For the key concepts of environmental information system, evaluation of the consequences of technology and product line analysis, a clear majority of the companies of this size gave "totally unknown" as their answer.

Only for the environmental audit, which, according to the corresponding EC regulation is to be introduced in 1995 as a voluntary ecological enterprise examination, does the picture change somewhat. The degree of knowledge of this measure varies between 22 percent and 53 percent, according to the size of the enterprise. But the environmental audit is only used at this time by a very few enterprises, and most frequently still by companies with more than 1,000 employees (29 percent). Bottom line calculations for waste and energy are preferably used in the chemical and printing industries, and ecological balance sheets nearly exclusively in the textile and plastics industries.

To be sure, most of the managers who were interviewed think the environmental audit makes sense, but such ideas often fail due to a limited budget: They fear that the costs could wind up higher than the savings. The amount of environmental protection laws gives a few industrial enterprises additional headaches. Heinrich Spies, for example, an ecologist at Varta Plastic (400 employees) in Waechtersbach, complains: "One is constantly certified and analyzed. Who can see through all that?"

### EU Adopts Looser Guidelines for Drinking Water

94WN0361B Duesseldorf VDI NACHRICHTEN  
in German No 28, 15 Jul 94 p 3

[Article by Sylvia von der Weiden: "Gloomy Prospects for the Drinking Water"]



[Text] Duesseldorf—The European Commission is rewriting the protection for drinking water. With the permit guidelines of 24 June for agricultural control chemicals, the regulations for protecting the drinking water from agricultural control chemical residue are being watered down.

At first glance, the Luxembourg compromise formula continues to be oriented toward the quality requirements of the European drinking water guideline of 1986. At that time, throughout the EU [European Union] pesticide limits of 0.1 µg per liter for the individual substance and 0.5 µg per liter for all pesticide residues were introduced, which were established according to the detection limits of the analysis. Today, eight years later, the protests by farmers' organizations and the ministers of agriculture from France and Great Britain, for example, are bearing fruit: Just a short time before the transfer of the EU presidency from Greece to Germany, the ministers agreed the last week of June on a new guideline for permitted agricultural control chemicals that form the basis for the toxicological, significantly higher, threshold values of the World Health Organization (WHO).

Thus, in the future a new premise applies to the protection of drinking water: Residue risk instead of prevention. While the health-hazardous insecticide DDT has been banned all across Europe since the 1970s, the WHO regards 2 µg per liter to be tolerable for its toxicologically reported values. The WHO also accepts 2 µg per liter, and thus a 20-fold increase in concentration over the European drinking water standard of 1986, for the pesticide Simazin, which is difficult to break down, and for Atrazin, which is banned on German fields. For the insecticide Pyridat, the WHO even regards a 1,000-fold higher value as toxicologically harmless.

But the agricultural council still lacked the courage expressly to endorse the clearly higher WHO values for pesticides. Thus, the Eurocrats put together a passage which is not mandatory on the national level and still grants the member nations a five-year permit period for pesticides, in the event their concentration lies above the limit of the drinking water guideline of 0.1 µg per liter, but below a toxicologically motivated level still to be set by the EU commission. During these five years the occurrence of potential residues must be monitored. If the measured pesticide concentrations are above 0.1 µg per liter, the laender must take measures.

"This regulation does not question the high standard of the ground water protection in Germany," in the opinion of Federal Agriculture Minister Jochen Borchert, who would have preferred to postpone the decision. People are also calm at the Federal Health Office (BGA) in Berlin. "We do not see any danger that Atrazin will be permitted here again," pesticide expert Dr. Wolfgang Lingk is convinced.

On the other hand, the EU decision triggered sharp criticism from representatives of the water industry and

the environmental organizations. In a position paper the Federal Association of the German Gas and Water Industry (BGW) in Bonn described the passage of the permission criteria for pesticides as "scandalous." Stephan Weidt, spokesman for the BGW, complains that the potential allowance of pesticides for five years does not provide sufficient protection for the water if the pesticide residues are above the presently valid mark for the drinking water limit. "It therefore accepts potential water pollution and permits pesticides banned in the FRG." In addition, the water industry is seriously concerned that pesticides could now also be permitted for which there are still no standardized methods of analysis.

A conflict is the inevitable result. The German water works anticipate additional costs of 260 million German marks [DM] a year in water treatment, if the low pesticide levels in drinking water are to continue to be adhered to. For the consumer the elimination of pesticide residues even today results in costs of between 10 pfennigs and DM 1.50 per m<sup>3</sup>.

Thomas Lenius of the Federation for Environment and Nature Protection (BUND) in Bonn describes the most recent action of the European agriculture ministers simply as a "catastrophe." "It is now to be feared that in this way the drinking water guideline, which is due for overhaul, will be undermined with its very low preventive levels." It is still undecided just when the drinking water guideline is to be so rewritten.

On the other hand, many pesticide manufacturers consider that the rules of the game for equal competition have been infringed on, if the marketing of their material is banned in Germany, but the same pesticide can be sold in a neighboring country because there the farmers are allowed to spray it on their fields without any problems. The umbrella organization for the European pesticide manufacturers (ECPA) in Brussels in sharp terms recently criticized the legislation, which "in an unfair manner puts many of the most effective, most carefully tested and most widely used pesticides in Europe at a disadvantage, because an arbitrary, scientifically unfounded and internationally unrecognized limit is imposed in a rigid manner."

It is not only the establishment of limits which is a hotly debated point. The studies that evaluate the risk or the harmlessness of the pesticides have also been subjected to the crossfire of criticism: All of them come from the manufacturers' laboratories. In the decision to permit them, the authorities thus have a delicate task, based on the manufacturers' data, to examine them in an independent and critical way.

Among the tasks for such studies is also to determine the effects of the pesticide on the environment. "For each active substance there are therefore extensive studies," assures Assistant Secretary Dr. Ralf Petzold from the Federal Agriculture Ministry in Bonn. But the complex interrelationships with the flora and fauna, the accumulation of residue in food chains or potential effects of the

breakdown products on the environment remain unclear so far. "There, we quickly get into areas where we are not able to do any more evaluations," Petzold admits.

### **Tough Measures Proposed Against Ozone**

94WN0361A Duesseldorf VDI NACHRICHTEN  
in German No 28, 15 Jul 94 p 1

[Article by Christa Friedl: "Tough Measures Against Ozone"]

[Text] Duesseldorf—Where the sun is high in the sky, the ozone levels are also climbing these days: Out of nitrogen oxides and hydrocarbons from traffic and industry, under prolonged UV radiation, the irritant gas is produced to which, according to estimates by experts, one out of 10 reacts with breathing and circulatory complaints or even lung damage. But significantly slower to react are the politics when it comes to preventing the ozone exposure. But the countermeasures here are obvious: By limiting traffic and heavy-emission processes in industry, the concentrations of the ozone precursor substances can be reduced and the development of ozone thus restricted. "But this knowledge alone is not enough," says Gunther Motz of the Prognosis Institute in Basel; "the political discussion needs a better economic base." This is to be created in the fall, but by that time the Basel experts, together with the Wuppertal Institute for Climate, Energy, Environment, expect to present the results of a research project, in which a total of 36 individual measures are being studied for their ozone-reducing effect.

One thing is already certain: In order to avert an acute ozone danger, the existing political measures such as introduction of catalytic converters or the vacuum pump at gasoline stations are not sufficient. "For this we need a mix of tough measures such as traffic limitations, including speed limits and reductions of certain production processes," Motz recommends.

It is not only German politics which are incited to heated arguments. There is major confusion about the gas outside the borders as well. This is shown by a glance at the presently existing threshold, limit and guideline values. Thus, in the United States the level above which the population is informed is an hourly average of 235  $\mu\text{g}/\text{m}^3$  air, in Japan and Switzerland this level is 120  $\mu\text{g}/\text{m}^3$ , in Norway traffic restrictions are imposed with as little as 100  $\mu\text{g}/\text{m}^3$ , and the World Health Organization recommends a threshold value of 150 to 200  $\mu\text{g}/\text{m}^3$ . In the EU, finally, since last summer three different one-hour averages apply: 110  $\mu\text{g}/\text{m}^3$  as a precautionary health level, 180  $\mu\text{g}/\text{m}^3$  as warning level 1 and 360  $\mu\text{g}/\text{m}^3$  as warning level 2.

The reason for the different handling of the values is that until now there have been few scientific studies which provide any clues to the toxicity of small but long-acting amounts for certain population groups. According to the Federal Health Office, lung function can be affected over several hours of exposure above approximately 160

$\mu\text{g}/\text{m}^3$  ozone per  $\text{m}^3$  of air, 200  $\mu\text{g}/\text{m}^3$  can lead to coughing and eye irritation and 240  $\mu\text{g}/\text{m}^3$  can already reduce the body's performance ability. "But here one should not forget that even lower levels can still be too high for an individual," reflects emission expert Dr. Claus Rink of the Society for Geoscientific Risk Research in Kerpen.

This is where the dilemma of the ozone discussion becomes clear: Without toxicologically convincing data, the political sector shies away from countermeasures. But without countermeasures the ozone levels in the summer will continue to remain very high. And high ozone levels, in turn, increase the pressure from municipalities and laender on the political sector. "Political measures are long overdue," in the opinion of Professor Michael Wagner, ozone expert at the Institute for Water, Soil and Air Sanitation of the Federal Environment Office. "A speed limit would be the most effective and administratively simplest measure to implement."

Last year, the Hessians pulled the brake on the traffic—at least on paper—with their own ozone ordinance. "If a one-hour average of 240  $\mu\text{g}/\text{m}^3$  is exceeded at three measuring stations, a speed limit of 90 km/h on Hessian autobahns, and 80 km/h on all other roads, is imposed," explains Dr. Angelika Broll from the Environment Ministry in Wiesbaden. Furthermore, the wind speed may not exceed a certain level and a low-interchange weather condition must prevail. Just how many car drivers will stick to the—non-sanctioned—speed limit, however, is something even Ms. Broll cannot say; so far, the Hessian conditions for an ozone alarm have never been reached.

### **Toepfer, BDI Discuss Environmental Issues in Industry**

AU3108161794 Frankfurt/Main FRANKFURTER  
ALLGEMEINE in German 31 Aug 94 p 11

["hal."-attributed report: "Industry Endorses Environmental Protection"]

[Text] Bonn, 30 August—Federal Environment Minister Klaus Toepfer (Christian Democratic Union) intends to keep to the idea of introducing a carbon dioxide energy tax. This is what the minister confirmed at a meeting of the German Industry Federation (BDI) in Cologne on the topic "Environmental Protection as an Economic Factor and a Factor Decisive For the Investment Center." Commenting on concerns that, as a result of too many environmental protection measures and an excessive increase in energy taxes, entire industrial branches would have to stop production in Germany, Toepfer said the government did not have such a development in mind. Nonetheless, the ecological situation in the European Union had to be improved. He said it was not very likely that the carbon dioxide energy tax would suffice as an instrument to achieve this.

BDI President Tyll Necker said industry had learned from the mistakes of the former GDR [German Democratic Republic] and endorsed environmental protection. Economic and ecological problems could not be

solved by way of removing branches burdening the environment. It was also absolutely clear that environmental protection was an economic factor that created new markets. However, this changed nothing about the fact that excessive and rapidly rising costs of environmental protection distorted competition and could cause companies to leave Germany as an investment and production center. Necker recalled the proverb that "too much good is not healthy." Industry continued to view environmental protection as a permanent task. The considerable successes reached in sulphur dioxide emissions or in water protection were not adequately noticed. In connection with environmental protection measures, it would, however, be sensible to consider individual cases to a larger extent.

Rainer Grohe of Viag AG mentioned the example of the German aluminum industry, which required a large amount of energy and produced a major percentage of it from hydropower. If the energy tax were to be considerably increased, this industrial sector had to be transferred to Canada, from where the products would then be transported back to Germany in a way burdening the environment. This would be counterproductive, Grohe said.

Lutz Hoffmann, president of the German Industry Research Institute (DIW), grants that environmental surcharges or regulations could increase costs in some branches more than in others. In relative terms, some industries would lose in competitiveness, while others would win. This would lead to structural change. However, both industry and politicians had to consider that structural change, oriented at the actual utilization of resources and the costs involved, would have a favorable effect on the general economic development and should therefore be pursued by economic policy. A country could operate environment policy alone, without endangering the investment location, if the average additional costs involved were absorbed by adjustments elsewhere.

Lothar Spaeth, board chairman of Jenoptik GmbH, also stressed the importance of the German environmental protection industry. He said Germany had missed developments in many important technological sectors. This should not repeat itself. Spaeth advocated an industrial policy by which the high ecological level of industry would be advanced further.

## NORWAY

### Environmental Technology Exports to China To Be Discussed

BR2608110894 Oslo AFTENPOSTEN in Norwegian  
24 Aug p 29

[Sigrid Elsrud report: "Our Environmental Technology Will Conquer China"]

[Text] This coming Friday [26 August] representatives of Norwegian industry and government authorities will meet in the Export Council's premises in Oslo. Directing their sights toward China, they will look at new possibilities for Norwegian environmental technology.

China is one of the first countries to follow up Agenda 21 of the UN conference on the environment in Rio with a comprehensive and concrete action plan. Sixty-two projects with a total economic framework of nearly 30 billion Norwegian kroner have been proposed.

"We see great international competition to obtain these projects," says special adviser Norman Weisz of Norviron, a group administered by the Norwegian Export Council which also has the backing of the Norwegian Research Council and the National Pollution Inspection Authority.

The Chinese action plan was presented to Weisz at an international conference in Beijing this summer. The plan is now being studied with Norwegian interests in mind, and five projects have been selected as the most interesting for Norwegian industry.

### Billion Kroner Market

There are additional reasons for the Chinese action plan being read with great interest. One is that more than 150 countries have endorsed Agenda 21, and all are expected to produce their own action plans for environmental projects. Another reason is that this plan is only the first step on a long Chinese way. "The Chinese have selected projects which are typical for the environmental problems their country is experiencing. One of their intentions is to try out foreign technology which can be further utilized," says Weisz.

And what about financing? China hopes to cover 10 percent of the cost of the action plan in the form of gifts and 40 percent through subsidized loans and commercial financing. The Chinese intend to pay the remaining half themselves. "We are dependent on close cooperation between industry and the authorities. In order to get a share in these projects, we also have to be competitive on the financing side," says Weisz.

The Chinese are imposing a new general environment tax domestically as well as wider application of environmental license fees. These are part of the financing package on the Chinese side.

Both private companies and the authorities have already seen that China is an exciting market for Norwegian environmental technology. Norviron and the Norwegian Export Council are working on plans for a Norwegian environmental projects center in Beijing. This will be the first office specializing in environmental technology. "China is an extremely difficult market because of the great cultural differences," says Weisz.



## UNITED KINGDOM

**Overhaul of Nuclear Waste Policy Begins**

94WN0395A London THE DAILY TELEGRAPH  
in English 6 Aug 94 p 13

[Article by Roger Highfield, science editor: "Rethink on Nuclear Waste"]

[Text] The government launched an overhaul of nuclear waste policy yesterday with a consultation document that said £100 million could be saved by delaying construction of a £1 billion nuclear waste dump at Sellafield for 50 years.

Nirex, the national nuclear waste agency, currently hopes to have the underground repository in operation by 2010.

The final decision depends on safety standards, planning consent, costs and responsibility to future generations, but the Department of the Environment's consultation document stated that "no fixed deadline should be set for the completion of the process."

However, it said that Nirex should continue investigating the possibility of constructing the dump by building an underground "rock lab" for studies of local geology.

In the light of the delays, it said that, because the safety of some nuclear wastes "cannot be assured in their current condition," they should be treated, even if this limited how they could be disposed of in future.

The document reopened the issue of the shallow disposal of waste by suggesting that the nuclear dump at Drigg,

Cumbria, should be allowed to receive intermediate-level waste, in addition to low-level waste, "provided the overall safety case for the site is not jeopardised."

The savings that could be made by a delay were disputed by a Nirex spokesman. "We believe that the economics of deep disposal at the earliest sensible scientific juncture is the way forward."

Greenpeace said yesterday that it was against direct disposal as a matter of principle, and against the change in the use of Drigg.

The document examined current policy in the light of changes which have taken place since the Department published a strategy in 1984, and complemented the review of the nuclear industry.

In preparation for a policy statement expected next year, it invited comment on preliminary conclusions, including:

- Disposal of high-level waste, which is on the agenda for the first time for a decade;
- Plans to carry out research for a new repository for high level waste, as opposed to the low and intermediate-level waste for the dump proposed by Nirex;
- Approval for a dry store for spent fuel, proposed by Scottish Nuclear at Torness, cutting the company's dependency on reprocessing at Sellafield. However, the secretary of State for Scotland will make a final decision in the light of the responses;
- The proposal that the organisation of radioactive waste disposal in the UK should be examined so that, for instance, Nirex should take responsibility for high-level waste disposal or come into public ownership, rather than be owned by the industry.

### IAEA's Blix Outlines Future of Nuclear Power

AU0509122194 Vienna Oesterreich Eins Radio Network  
in German 1000 GMT 5 Sep 94

[Helmut Opletal report on speech by International Atomic Energy Agency Director General Hans Blix to the 5 September opening session of a conference on nuclear power held in Vienna—recorded]

[Text] That the chairman of the IAEA emphasizes the advantages of the civilian use of nuclear energy is no big surprise. After all, this is the very task of this UN organization. Nevertheless, it is quite interesting how longterm IAEA Secretary General Hans Blix, a Swede, outlines the future of nuclear power plants.

Despite ambitious energy conservation and rising energy prices, demand for electricity will continue to increase, Blix said. The end of the current recession in the major industrialized nations, including Russia, will contribute to it, as will the worldwide population growth and people's desire for higher standards of living. Economists estimate that the demand for electricity will increase by 75 percent by the year 2010, so that nuclear energy will remain an option, even though the originally anticipated growth rates for the share of nuclear power have not materialized.

Blix said that in some countries there is distrust and opposition to nuclear energy, while elsewhere, for example in parts of Asia, the use of nuclear power has clearly increased. Some countries that decided to do without nuclear energy or to phase it out gradually are now seriously considering the nuclear option again, Secretary General Hans Blix said.

Why is that so? At the moment, energy production from fossil fuels is favored as a result of low world market prices. In the medium term this might, however, change again. Nuclear energy is much less dependable on fuel prices, Blix said. Moreover, as a result of new technological developments used in modern facilities, a standard has been reached that combines efficiency, reliability, and safety to a very high degree. The environmental card might today even be used in favor of the use of nuclear energy, Hans Blix said.

If the electric energy that is currently produced from nuclear energy worldwide had to come from coal-fired plants, this would result in 1,600 million tonnes in carbon dioxide emissions, which would run counter to the objectives defined at the Toronto environmental conference, namely to reduce the emission of carbon dioxide by 4,000 million tonnes by the year 2005, Blix said.

Nevertheless, what was conspicuous in Hans Blix's speech was that although he talked about the first civilian Soviet nuclear power plant Obninsk, he did not mention the name Chernobyl in his opening address.

As far as a prediction regarding the future of nuclear power is concerned, the secretary general remains cautious. In almost all countries there is today outspoken or even strong resistance to increased dependence on nuclear power. For developing countries this form of energy is not ideal because of the problematic infrastructure. Only when safety, reliability, and environmental advantages continue to be demonstrated in practice, can nuclear energy gain new momentum, IAEA Secretary General Blix concluded.

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